EMX-Q87

Intel® Q87 with Core™ i7/ i5 /i3 mini-ITX Motherboard

User's Manual

3rd Ed – 05 August 2014

Part No: E2047MQ8702R

FCC Statement

THIS DEVICE COMPLIES WITH PART 15 FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:

(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE.

(2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.

THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS "A" DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES.

THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND, IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS.

OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE IN WHICH CASE THE USER WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT HIS OWN EXPENSE.

This guide is designed for experienced users to setup the system within the shortest time. For detailed information, please always refer to the electronic user's manual.

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1. Collect all the information about the problem encountered. (For example, CPU type and speed, Avalue's products model name, hardware & BIOS revision number, other hardware and software used, etc.) Note anything abnormal and list any on-screen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information available.
3. If your product is diagnosed as defective, obtain an RMA (return material authorization) number from your dealer. This allows us to process your good return more quickly.
4. Carefully pack the defective product, a complete Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

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1. Getting Started

1.1 Safety Precautions

Warning!

Always disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.

Caution!

Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis

1.2 Packing List

Before you begin installing the single board, make sure that the following materials are included in the package:

- 1 x EMX-Q87 Mini ITX Motherboard
- 1 x CD-ROM contains OS drivers/QIG/User's Manual
- 2 x COM Port Cable
- 2 x SATA Cable
- 1 x I/O shield

If any of the above items is damaged or missing, contact your retailer.

1.3 Document Amendment History

Revision	Date	Comment
1st	November 2013	Initial Release
2nd	February 2014	Update Setting Jumpers & Connectors
3rd	August 2014	Update Setting Jumpers & Connectors

This manual describes the Avalue Technology EMX-Q87 Single Board.

We have tried to include as much information as possible but have not duplicated information that is provided in the standard IBM Technical References, unless proven to be necessary to aid in the understanding of this board.

We strongly recommend that you read this manual carefully before attempting to install the EMX-Q87 series or change the standard configurations. Whilst all the necessary information is available in this manual, it is recommend to contact your supplier for guidance for any queries and concern.

Please be aware that it is possible to create configurations within the CMOS RAM that may make booting impossible. If this should happen, clear the CMOS settings, (see the description of the Jumper Settings for details).

If you have any suggestions or find any errors concerning this manual and want to inform us, please contact our Customer Service department with the relevant details.

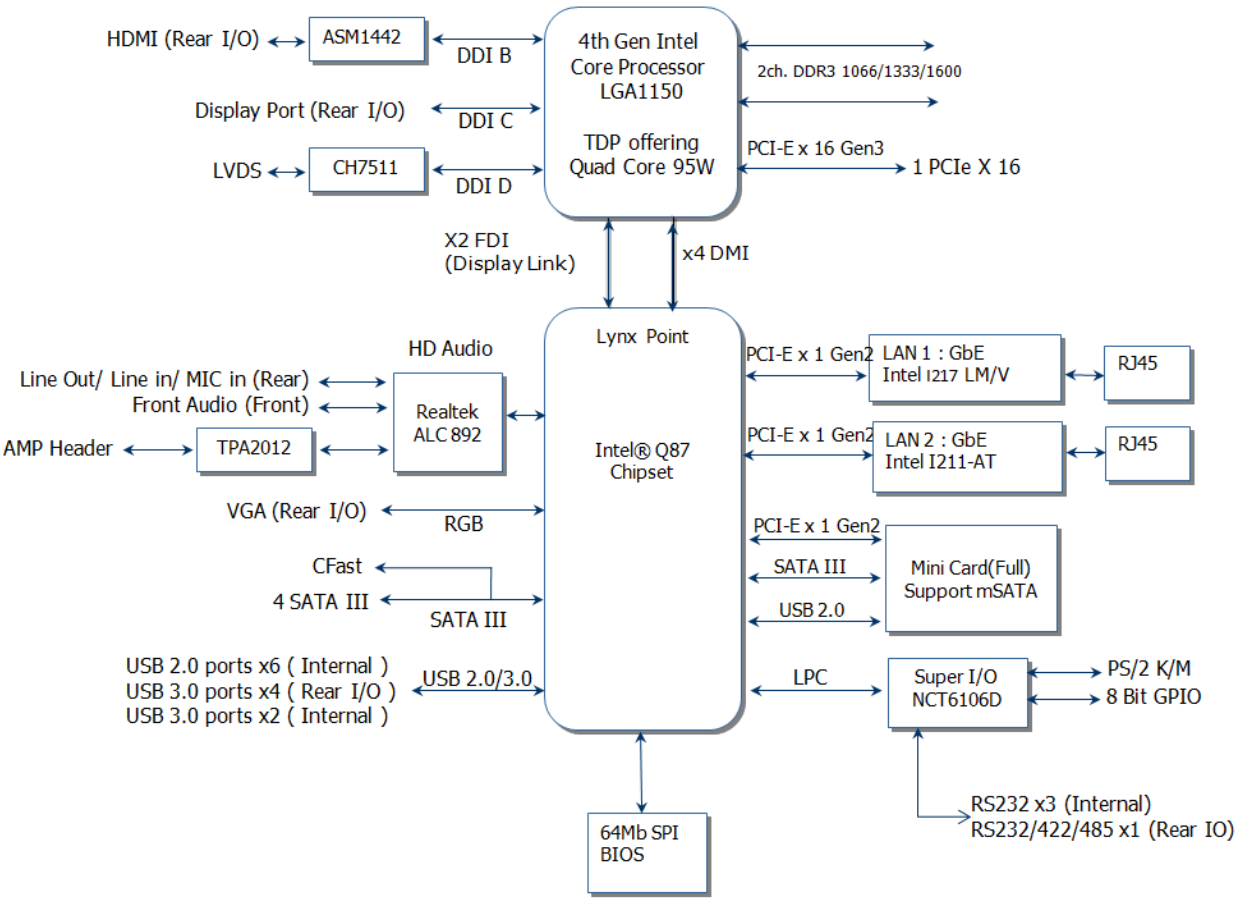
1.4 System Specifications

System	
CPU	Socket LGA1150 supports Core i7/i5/i3 CPU
BIOS	AMI 64 Mb BIOS
System Chipset	Intel® Q87
I/O Chipset	Nuvoton NCT6106D
Memory	2 x 204 Pin SODIMM sockets supports DDR3 memories 1600/1333 MHz up to 16GB
Watchdog Timer	Reset: 1 sec.~255 min. and 1 sec. or 1 min./step
H/W Status Monitor	Monitoring temperatures, voltages, and cooling fan status. Auto throttling control when CPU overheats
Expansion Slots	1 x PCI-E x 16 slot Gen.3, 1 x Mini PCI-E slot, 1 x Cfast(Optional)
DIO	8 Bit (4 in, 4 out)
S3 / S4	Yes
TPM	TPM1.2 (Infineon® TPM chip 9635 TT 1.2 on board, optional)
Wake up on LAN or Ring	LAN (PXE)
Smart Fan Control	Yes, CPU FAN(by SIO)
Display	
Chipset	Intel® Graphics Media Accelerator HD 4000/4600 integrated
Display Memory	DVMT Support up to 1.7GB Memory
Max. Resolution	2560 x 1600 bpp(@ 75Hz)
Display Port	on board, up to 2560 x 1600
LVDS	on board, via DP to LVDS monitor controller, up to 1920 x 1200
VGA	on board, up to 2048 x 1536
HDMI	on board, via level shifter, up to 2560 x 1600
Audio	
Audio Codec	Realtek® ALC892, 5.1 +2 with two independent Streaming
Audio Interface	Line in,Line Out,Mic-in
Ethernet	
LAN1	Intel I211AT Gigabit Ethernet controller
LAN2	Intel I217LM Gigabit Ethernet controller (PHY)
Back I/O Port	
Back Panel	1 x PS2 KB/MS 1 x COM Port (RS-232/422/485 supported) 1 x Display Port

	1 x VGA 1 x HDMI 2 x RJ45 port 4 x USB 3.0 1 x 3 Audio Jacks(Line-in/Line-Out/Mic in)
Internal I/O Connector	
Internal I/O	4 x SATAIII connectors (RAID 0, 1, 5, 10 supported) 3 x USB connectors support additional 6 USB 2.0 ports 3 x COM header (RS-232 supported, COM2 +5V&+12V supported, selected by jumper.) 1 x CPU Fan connector 1 x System Fan connector 1 x Chassis Intrusion header 1 x Front Audio connector 1 x Front panel header 1 x USB 3.0 Connector support 2 USB 3.0 Ports 1 x LVDS Connector (24bit , Dual Channel) 1 x 8 Bit DIO connector 1 x 20 pin ATX Power connector 1 x 2x2 pin 12V Power connector
Mechanical & Environmental	
Power Type	AT/ATX
Operating Temperature	0~60°C (32~140°F)
Operating Humidity	0%~90% relative humidity, non-condensing
Size (L x W)	6.69" x 6.69" (170mm x 170mm)

1.5 Architecture Overview – Block Diagram

The following block diagram shows the architecture and main components of EMX-Q87.



2. Hardware Installation

2.1 Product highlights

2.1.1 Product Overview

Supports latest Intel LGA 1150 CPU-socket interface processor, the 4th Generation Intel® Core i7/i5/i3 Haswell desktop processors which are built on 22 nm technologies to provide smart performance and responsiveness on executing tasks, It combines the CPU and GPU to offer fantastic HD media and graphics, especiallyon 3D gaming experience.

DMI (Direct Media Interface) architecture connects between the processor and chipset at 5.0GT/s which twice the speed of previous version. The exceptionally increased interconnect bit rate from 2.5GT/s up to 5.0GT/s would effectively eliminates the bottle neck of the system performance and brings the most terrific computing experience fromthe present to the future. SATA 3.0 doubles the transfer speed of SATA 2.0,running at speed up to 6.0Gb/s, and can connect with any other SATA 3.0Gb/s and 1.5Gb/s devices for backward compatibility.

Supports RAID 0(Striped disk array), RAID 1(Mirroring disk array), RAID 5(Block Interleaved Distributed Parity), RAID 10 (A Stripe of Mirrors). Provides users the performance and protection. Integrated 5.1-channel HD Audio CODEC delivering advanced multi-channel audio and bringing you the experience of home theater-quality sound. Delivers transfer speed ten times faster than conventional 10/ 100 Ethernet connections, supporting a high transfer rate up to Gigabit/s. Gigabit LAN is the networking standards for the future and is ideal for handing large amount of data such as video, audio, and voice.

Choose an environment-friendly, fully RoHS-compliant ECS product as the foundation for keeping harmful substances out of our ecosystem.

2.1.2 Platform Features and Benefits

•Integrated Gfx (Intel® HD Graphics 4000/4600) with enhanced operating modes to enable excellent graphics performance in power and cost sensitive embedded applications

• DirectX® 11.1 & Open GL 4.0 let you enjoy awesome graphics performance, stunning 3D visual effect and dynamic interactivity

• Memory support, integrated low voltage DDR3 memory controller

2.1.3 Key Architecture Features

•Supports Intel LGA 1150 CPU, the 4th Generation Intel® Core i3, i5, i7 desktop processors.
-22nm monolithic die
-Integrated Gfx Intel® HD Graphics 4600 (GT2) & memory controller
-4 &2 Cores, up to 8MB LLC
-HW accelerated video CODECs
- Compatible with high speed DDR3-1600
-PCIe* (CPU): Gen 3.0, 8GT/s, up to 20 lanes (4 ctls)**
-TDP: 35W-65W (22nm Haswell Platform)

- Intel® Turbo Boost Technology 2.0
  -More efficient power sharing between CPU and Graphics
- Intel® Hyper-Threading Technology
- Intel® Advanced Vector Extensions 2 (Intel® AVX2)
- Transactional Synchronization Extensions (TSX)
- Integrated Display Interfaces

- Triple Independent Display Support
- HDMI
- Display Port
- Analog VGA
- LVDS

- Intel® HD Graphics 4000/4600

- DirectX® 11.1
  - Improved realism for DX 3D applications. Improved rendering.
- OpenGL 4.0
  - Improved realism for OGL 3D based application

- Intel Quick Sync Video

- Enables faster and higher quality video editing, recording and sharing

- I/O

- PCI Express® x 16 Gen 3 8GT/s
- Four SATA ports (4 port of Gen 3.0) support RAID 0,1, 5, 10
- Gigabit Ethernet Media Access Controller (GbE MAC)

IPv4 and IPv6 Checksum Offload

- High Definition Audio
- USB: Gen 2.0, up to 6 Ports / Gen 3.0, up to 6 Ports
- SMBus 2.0
- LPC Bus

Supports SPI devices

- Hardware Monitor

Fan control (Voltage, Temp)

Watchdog timer

- Power Management

- Dual Dynamic Power Management

Separate power planes for cores and memory controller

- Advanced Configuration and Power Interface (ACPI) 5.0

Before you Proceed

Take note of the following precautions before you install motherboard components or change any motherboard settings.

- Unplug the power cord from the wall socket before touching any component.
- Use a grounded wrist strap or touch a safely grounded object or a metal object, such as the power supply case, before handling components to avoid damaging them due to static electricity
- Hold components by the edges to avoid touching the ICs on them.
- Whenever you uninstall any component, place it on a grounded anti-static pad or in the bag that came with the component.
- Before you install or remove any component, ensure that the ATX power supply is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, and/or components.

2.2 Motherboard Overview

Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it. Refer to the chassis documentation before installing the motherboard.

Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so can cause you physical injury and damage motherboard components.

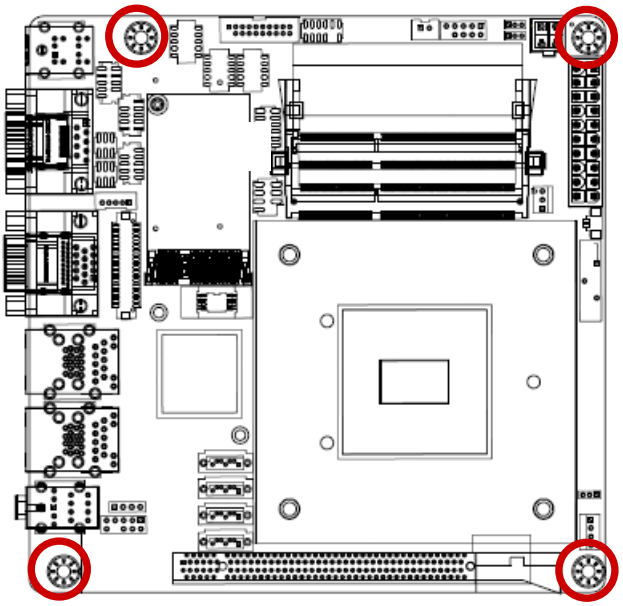
2.2.1 Placement Direction

When installing the motherboard, make sure that you place it into the chassis in the correct orientation. The edge with external ports goes to the rear part of the chassis as indicated in the image below.

2.2.2 Screw Holes

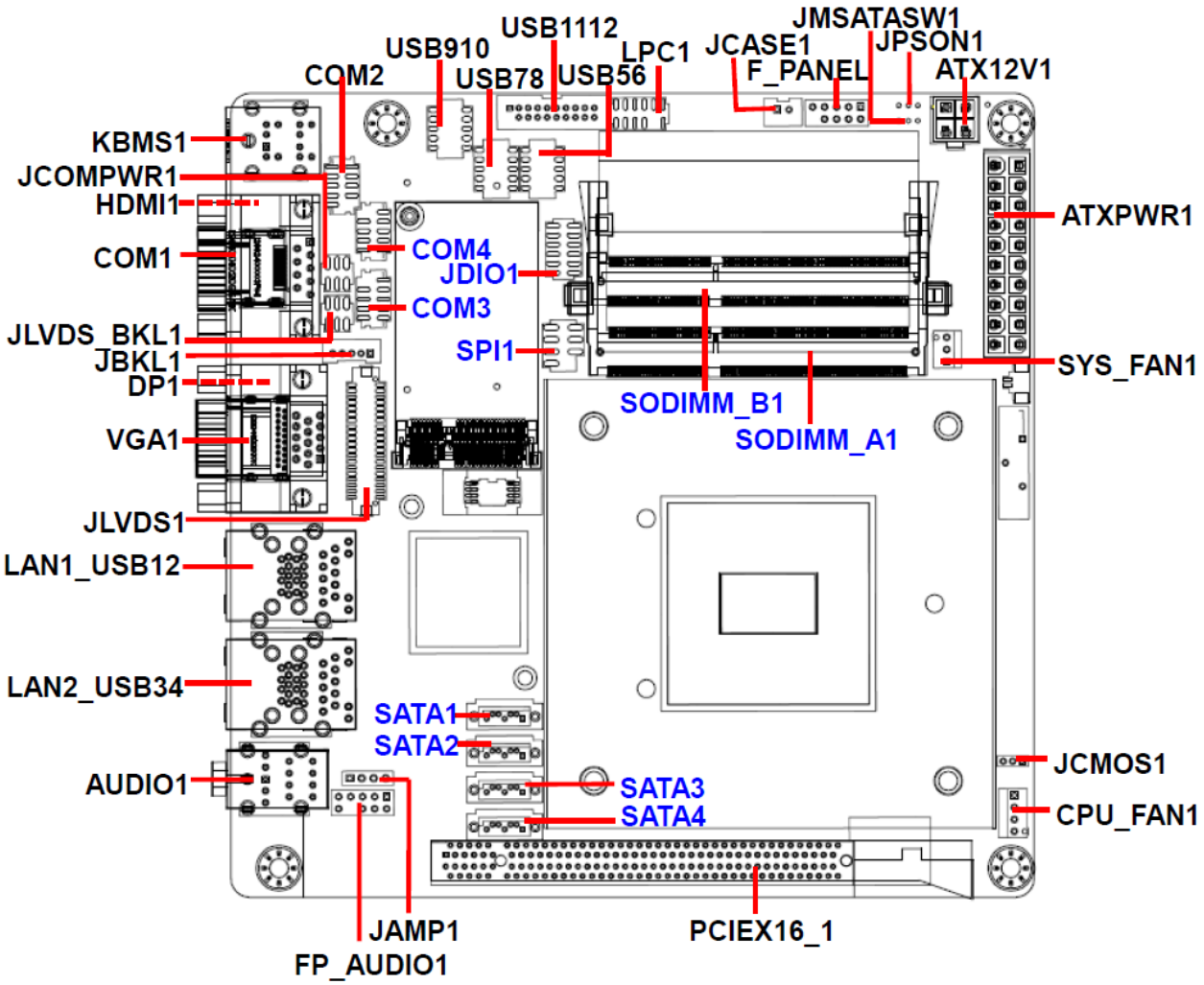
Place four (4) screws into the holes indicated by circles to secure the motherboard to the chassis.

Do not over tighten the screws! Doing so can damage the motherboard.



Place this side towards the rear of the chassis.

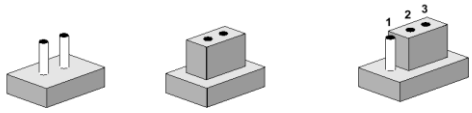
2.2.3 Motherboard Layout



2.3 Jumper and Connector List

You can configure your board to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch.

It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To "close" a jumper you connect the pins with the clip. To "open" a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case, you would connect either two pins.



Open Closed Closed 2-3

The jumper settings are schematically depicted in this manual as follows:

Open Closed Closed 2-3

A pair of needle-nose pliers may be helpful when working with jumpers.

Connectors on the board are linked to external devices such as hard disk drives, a keyboard, or floppy drives. In addition, the board has a number of jumpers that allow you to configure your system to suit your application.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

The following tables list the function of each of the board's jumpers and connectors.

Jumpers

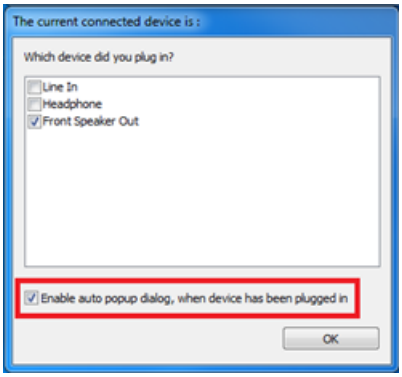
Label	Function	Note
JCMOS1	Clear CMOS Jumper	
JPSON1	ATX/AT Mode Selection	
JCOMPWR1	COM2 Ring-In/ +12V/ +5V Select	
JLVDS_BKL1	LCD Inverter Setting Connector	
JMSATASW	M-SATA/mini PCIe Selection	

Connectors

Label	Function	Note
VGA1	VGA Video Port	
LAN1/2_USB12/34	Gigabit LAN (RJ-45) Connector USB 3.0 Connector x 4	
AUDIO1	Line-in port (Light blue) Line-out port (Lime)	

	Microphone port (Pink)
JLVDS1	LVDS Connector
DP1	Display Port
KBMS1	PS/2 Keyboard & Mouse Connector
ATXPWR1	20pin ATX Power Connector
ATX12V1	12V ATX Power Connector
COM1	Serial Port 1 Connector (Support RS422/RS485)
COM2~4	Serial Port 2~4 Connectors
LPC1	LPC Connector
F_PANEL	Front Panel Connector
CPU_FAN1	CPU Fan Connector
SYS_FAN1	System Fan Connector
JCASE1	Chassis Intrusion Connector
SATA1~4	Serial ATA Connector
USB56/78/910/1112	Front USB Header
JBKL1	Back Light Controller Connector
FP_AUDIO1	Front Panel Audio Connector
JAMP1	Amplifier Connector
JDIO1	Digital I/O Connector
PCIEX16_1	PCIe Connector
SODIMM_A1/B1	DDR3 SODIMM Socket
SPI1	SPI Connector
HDMI1	HDMI Port

The on-screen message alerting you about headphones being connected to the computer. The Realtek audio software features an automatic jack sensing option to let you know when something has been inserted into an audio port.


The current connected device is :
Which device did you plug in?
Line In
Headphone
Front Speaker Out
Enable auto popup dialog, when device has been plugged in
OK

2.4 Central Processing Unit (CPU)

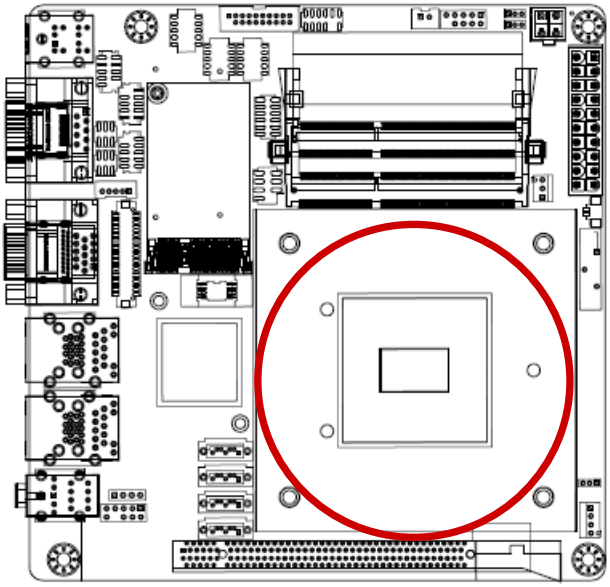
The motherboard comes with a surface mount LGA1150 socket designed for the Intel® Core™ i7/ i5/ i3 processor in the 1150-land package.

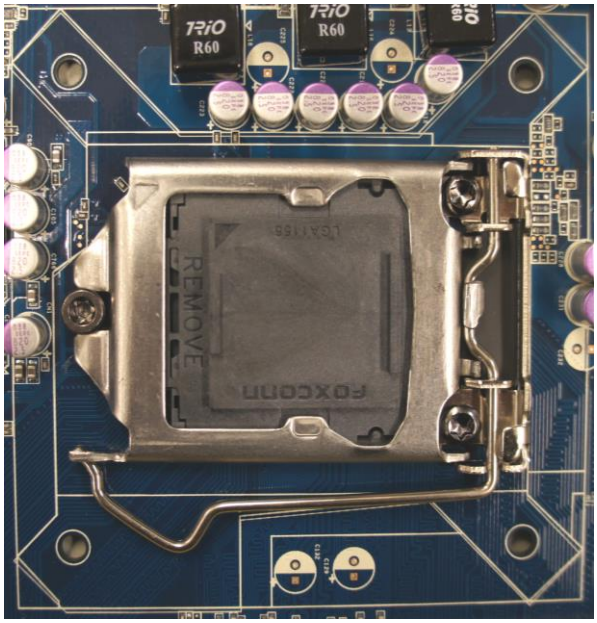
- Your boxed Intel® Core™ i7/ i5/ i3 LGA1150 processor package should come with installation instructions for the CPU, fan and heatsink assembly. If the instructions in this section do not match the CPU documentation, follow the latter.
- Upon purchase of the motherboard, make sure that the PnP cap is on the socket and the socket pins are not bent. Contact your retailer immediately if the PnP cap is missing, or if you see any damage to the PnP cap/socket pins/motherboard components. Avalue will shoulder the cost of repair only if the damage is shipment/transit-related.
- Keep the cap after installing the motherboard. Avalue will process Return Merchandise Authorization (RMA) requests only if the motherboard comes with the cap on the LGA1150 socket.
- The product warranty does not cover damage to the socket pins resulting from incorrect CPU installation/removal, or misplacement/loss/incorrect removal of the PnP cap.
- Install the CPU fan and heatsink assembly before you install motherboard to the chassis.

If you purchased a separate CPU heatsink and fan assembly, make sure that you have properly applied Thermal Interface Material to the CPU heatsink or CPU before you install the heatsink and fan assembly.

2.4.1 Installing the CPU

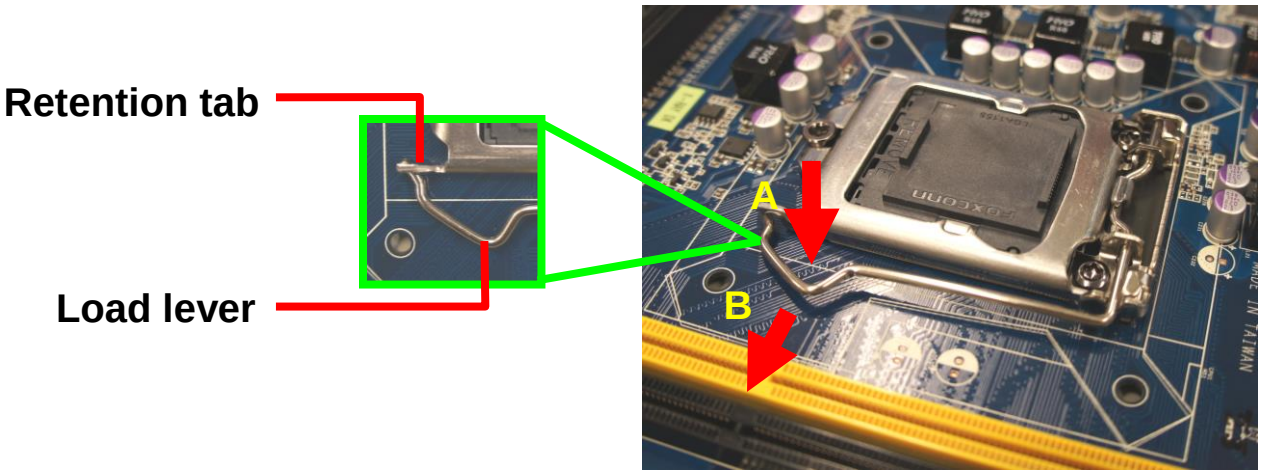
1. Locate the CPU socket on the motherboard.





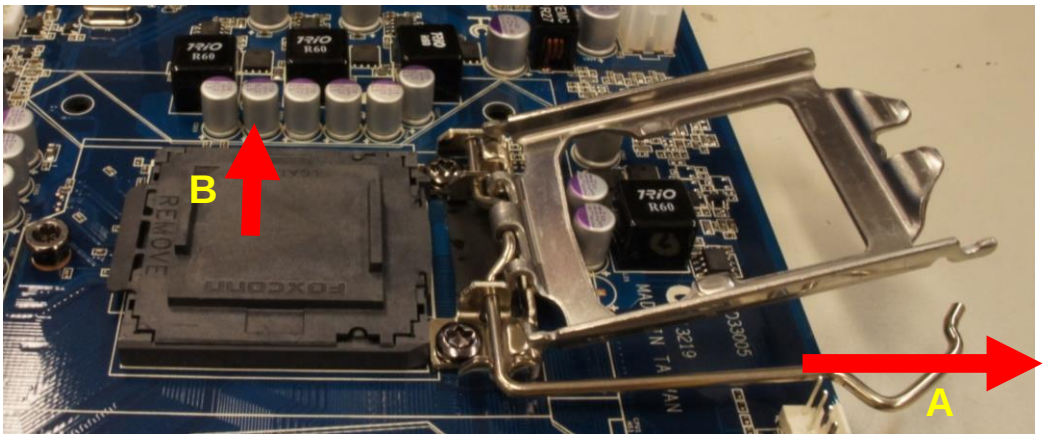
Before installing the CPU, make sure that the socket box is facing towards you and the load lever is on your left.

2. Press the load lever with your thumb (A), then move it to the left (B) until it is released from the retention tab.

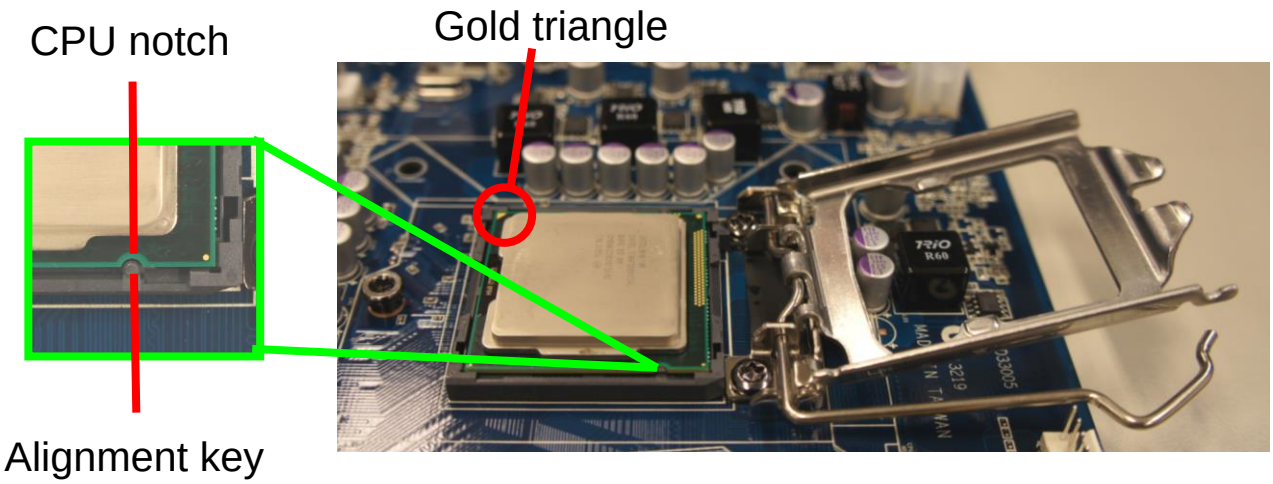


To prevent damage to the socket pins, do not remove the PnP cap unless you are installing a CPU.

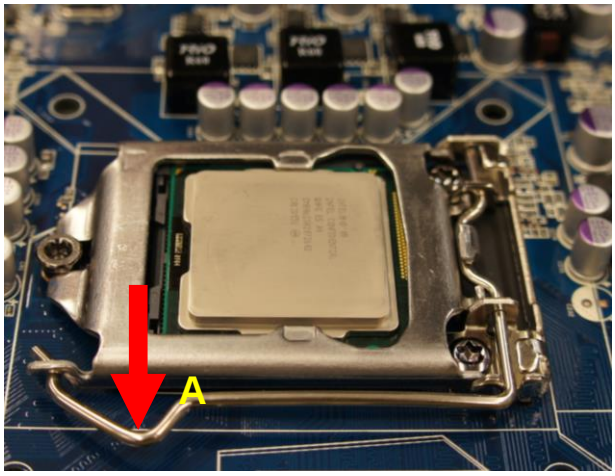
3. Lift the Load lever with your thumb and forefinger to around 180º angle (A), then pull the PnP cap from the CPU socket to remove (B).



4. Position the CPU over the socket, making sure that the gold triangle is on the top-left corner of the socket then fit the socket alignment key into the CPU notch.



5. Pull back the load lever , then push the load lever (A) until it snaps into the retention tab.



The CPU fits in only one correct orientation. DO NOT force the CPU into the socket to prevent bending the connectors on the socket and damaging the CPU!

2.4.2 Installing the CPU Heatsink and Fan

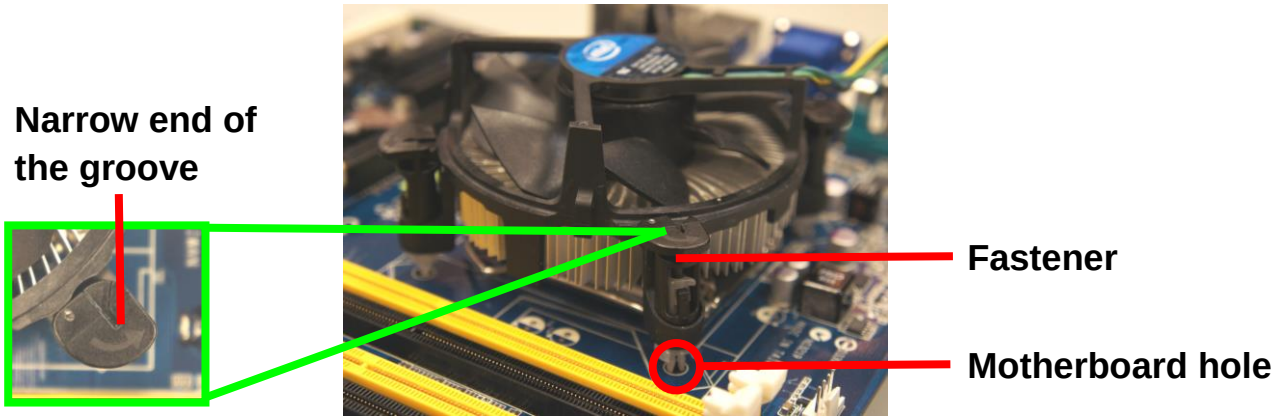
Intel® Core™ i7/ i5/ i3 LGA1150 processor requires a specially designed heatsink and fan assembly to ensure optimum thermal condition and performance.

- Install the motherboard to the chassis before you install the CPU fan and heatsink assembly.
- When you buy a boxed Intel® Core™ i7/ i5/ i3 LGA1150 processor, the package includes the CPU fan and heatsink assembly. If you buy a CPU separately, make sure that you use only Intel® certified multi-directional heatsink and fan.
- Your Intel® Core™ i7/ i5/ i3 LGA1150 processor LGA1150 heatsink and fan assembly comes in a push-pin design and requires no tool to install.

If you purchased a separate CPU heatsink and fan assembly, make sure that you have properly applied Thermal Interface Material to the CPU heatsink or CPU before you install the heatsink and fan assembly.

To install the CPU heatsink and fan:

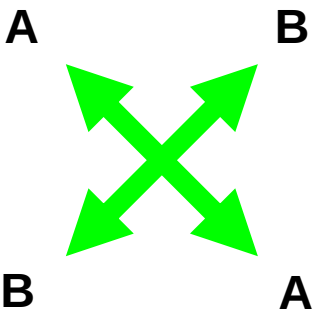
1. Place the heatsink on top of the installed CPU, making sure that the four fasteners match the holes on the motherboard.

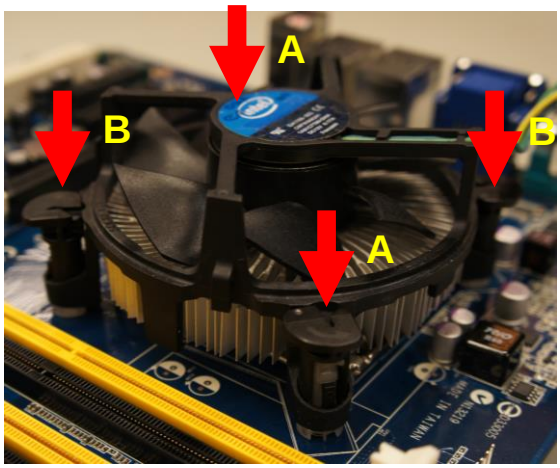


Orient the heatsink and fan assembly such that the CPU fan cable is closest to the CPU fan connector.

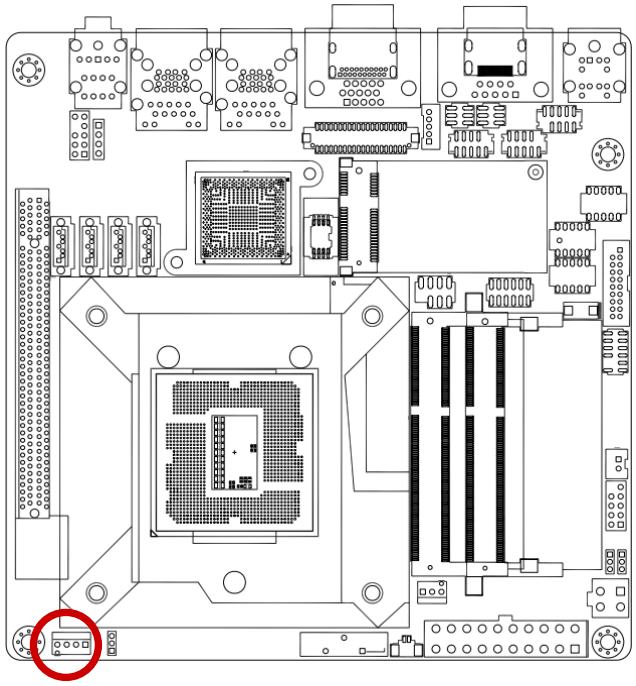
- Make sure each fastener is oriented as shown, with the narrow groove directed outward.

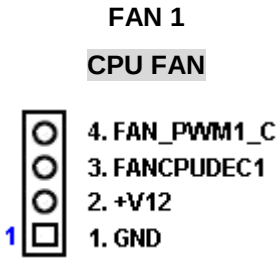
2. Push down two fasteners at a time in a diagonal sequence to secure the heatsink and fan assembly in place.

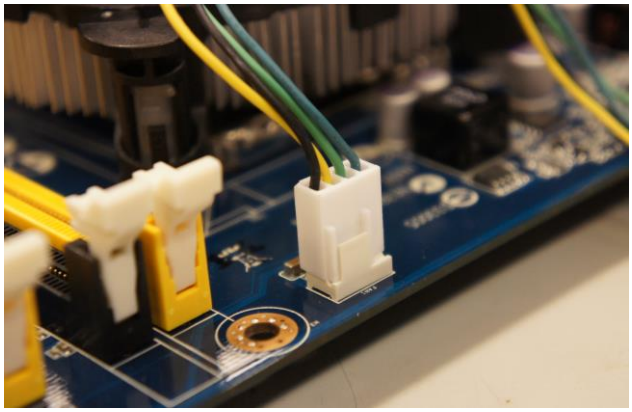




3. Connect the CPU fan cable to the connector on the motherboard labeled CPU_FAN.







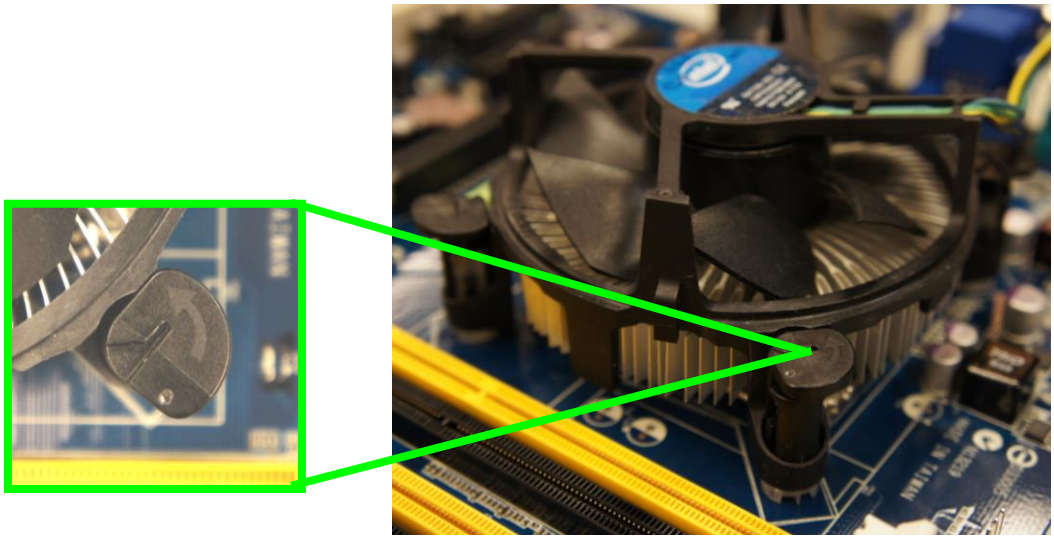
Do not forget to connect the fan cables to the fan connectors. Insufficient air flow inside the system may damage the motherboard components.

These are not jumpers! DO NOT place jumper caps on the fan connectors.

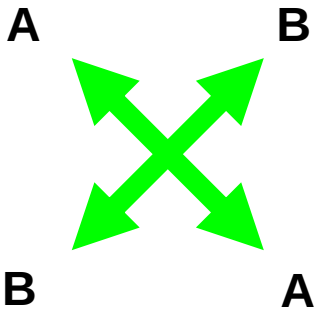
2.4.3 Uninstalling the CPU Heatsink and Fan

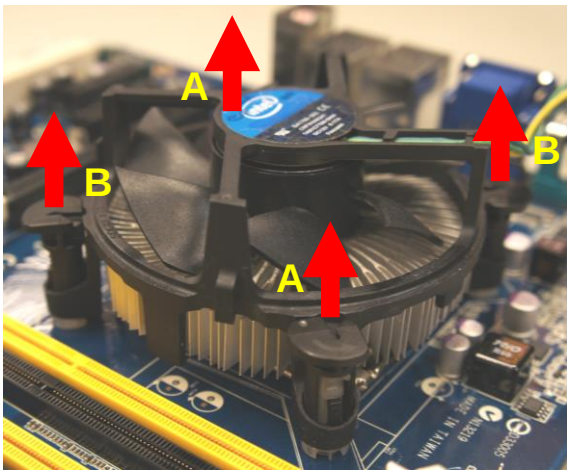
To uninstall the CPU heatsink and fan:

1. Disconnect the CPU fan cable from the connector on the motherboard.
2. Rotate each fastener counterclockwise

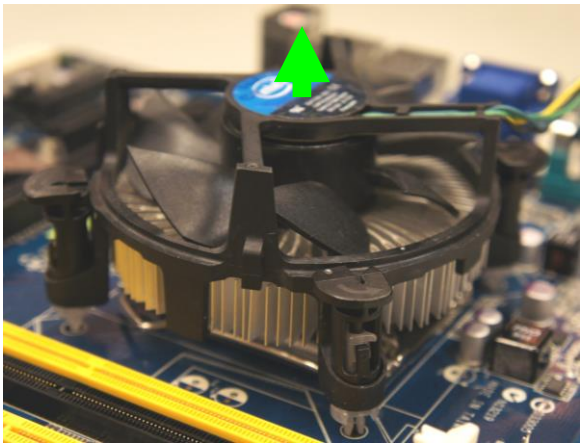


3. Pull up two fasteners at a time in a diagonal sequence to disengage the heatsink and fan assembly from the motherboard.





4. Carefully remove the heatsink and fan assembly from the motherboard.



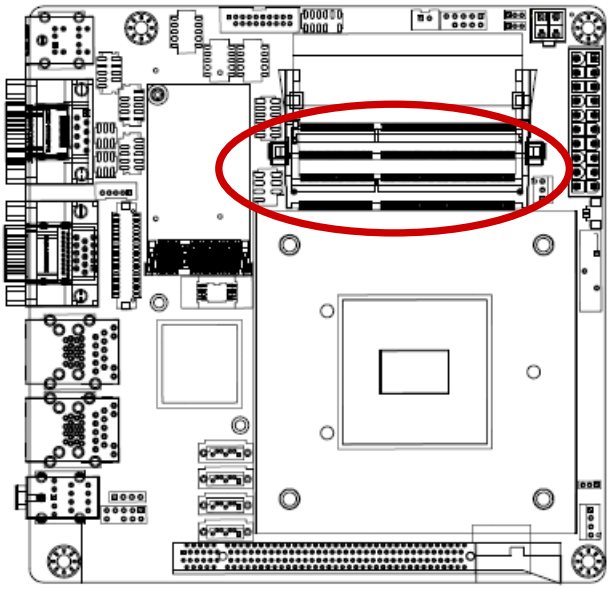
5. Rotate each fastener clockwise to ensure correct orientation when reinstalling.

2.5 System Memory

2.5.1 Overview

The motherboard comes with two 204-pin Double Data Rate 3 (DDR3) Dual Inline Memory Modules (SODIMM) sockets.

A DDR3 module has the same physical dimensions as a DDR SODIMM but has a 204-pin footprint compared to the 240-pin DDR2 DIMM. DDR3 SODIMMs are notched differently to prevent installation on a DDR2 SODIMM socket. The following figure illustrates the location of the sockets:



204-Pin DDR3 SODIMM sockets

Channel	Socket
Channel A	DIMMA1
Channel B	DIMMB1

2.5.2 Memory Configurations

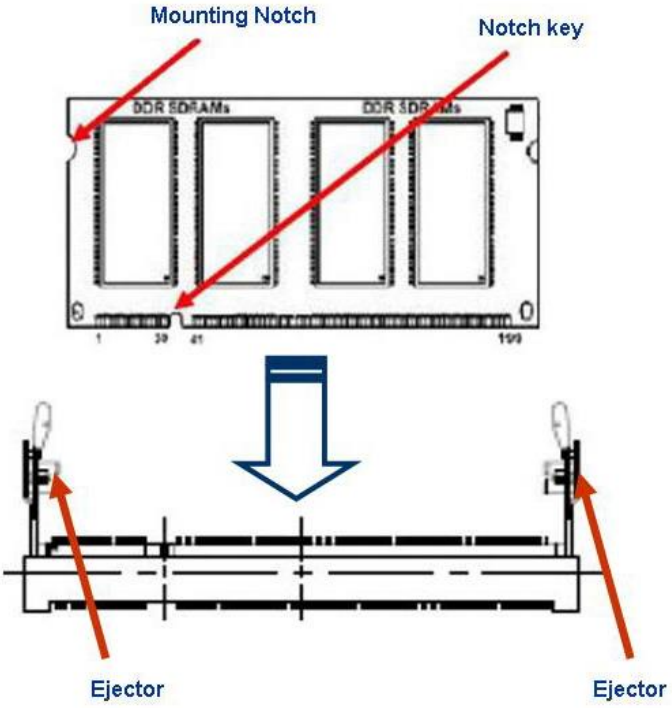
You may install 2 GB, 4 GB , and 8 GB unbuffered ECC or non-ECC DDR3 SODIMMs into the SODIMM sockets using the memory configurations in this section.

- IF you installed two 2GB memory modules, the system may detect less than 4GB of total memory because of address space allocation for other critical functions. This limitation applies to Windows XP 32-bit version operating system since it does not support PAE (Physical Address Extension) mode.
- For dual-channel configuration, the total size of memory module(s) installed per channel must be the same for better performance (DIMMA1 = DIMMB1).
- When using one DDR3 SODIMM module, install into DIMMB1 slot only.
- Always install SODIMMs with the same CAS latency. For optimum compatibility, it is recommended that you obtain memory modules from the same vendor.

2.5.3 Installing a DDR3 DIMM

Make sure to unplug the power supply before adding or removing DIMMs or other system components. Failure to do so may cause severe damage to both the motherboard and the components.

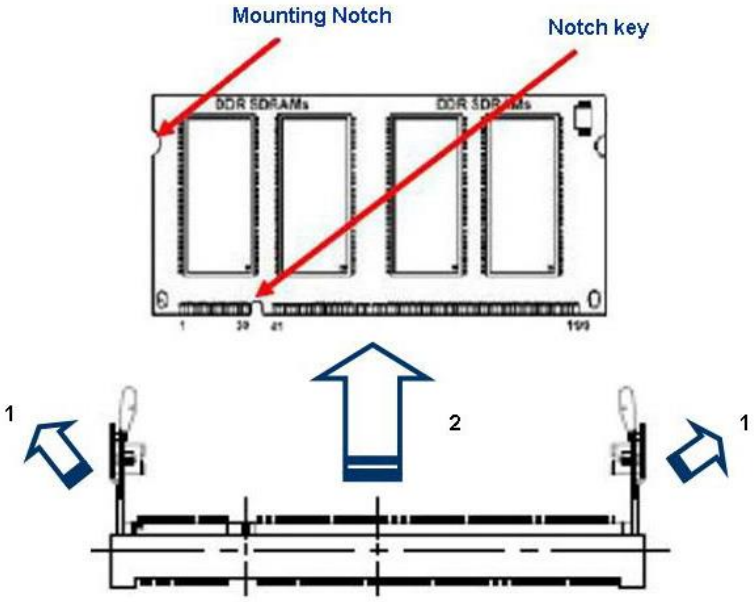
1. Locate the SODIMM socket on the board.
2. Hold two edges of the SODIMM module carefully, and keep away of touching its connectors.
3. Align the notch key on the module with the rib on the slot.
4. Firmly press the modules into the socket which will automatically snap into the mounting notch. Do not force the SODIMM module in with extra force as the DIMM module only fits in one direction.



- A DDR3 SODIMM is keyed with a notch so that it fits in only one direction. DO NOT force a SODIMM into a socket to avoid damaging the DIMM.
- The DDR3 SODIMM sockets do not support DDR/DDR2 SODIMMs. DO NOT install DDR/DDR2 SODIMMs to the DDR3 SODIMM socket.

2.5.4 Removing a DDR3 SODIMM

1. Press the two ejector tabs on the slot outward simultaneously, and then pull out the DIMM module.



Support the DIMM lightly with your fingers when pressing the ejector tabs. The DIMM might get damaged when it flips out with extra force.

2.6 Expansion Card

In the future, you may need to install expansion cards. The following sub-sections describe the slots and the expansion cards that they support.

Make sure to unplug the power cord before adding or removing expansion cards. Failure to do so may cause you physical injury and damage motherboard components.

2.6.1 Installing an Expansion Card

1. Before installing the expansion card, read the documentation that came with it and make the necessary hardware settings for the card.
2. Remove the system unit cover (if your motherboard is already installed in a chassis).
3. Remove the bracket opposite the slot that you intend to use. Keep the screw for later use.
4. Align the card connector with the slot and press firmly until the card is completely seated on the slot.
5. Secure the card to the chassis with the screw you removed earlier.
6. Replace the system cover.

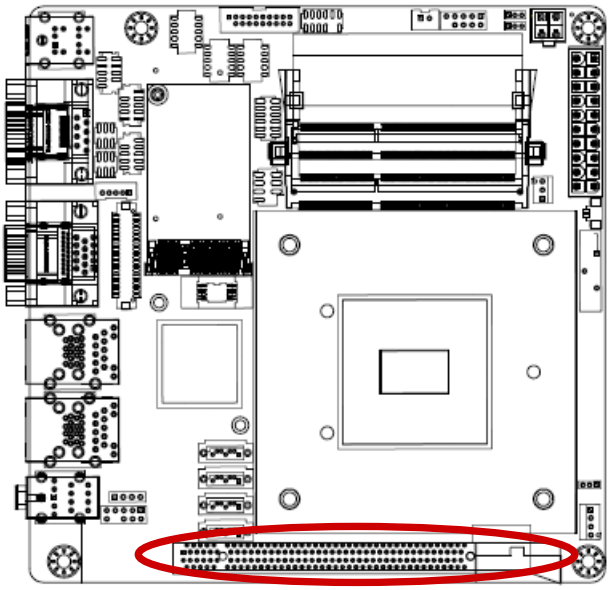
2.6.2 Configuring an Expansion Card

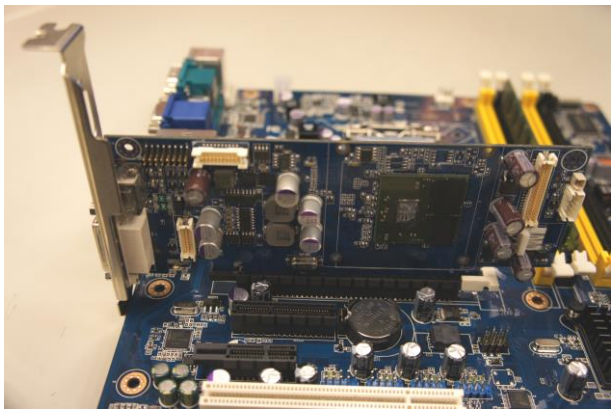
After installing the expansion card, configure it by adjusting the software settings.

1. Turn on the system and change the necessary BIOS settings, if any. See Chapter 2 for information on BIOS setup.
2. Assign an IRQ to the card if needed. Refer to the tables on the next page.
3. Install the software drivers for the expansion card.

2.6.2.1 PCI Express x16 slot

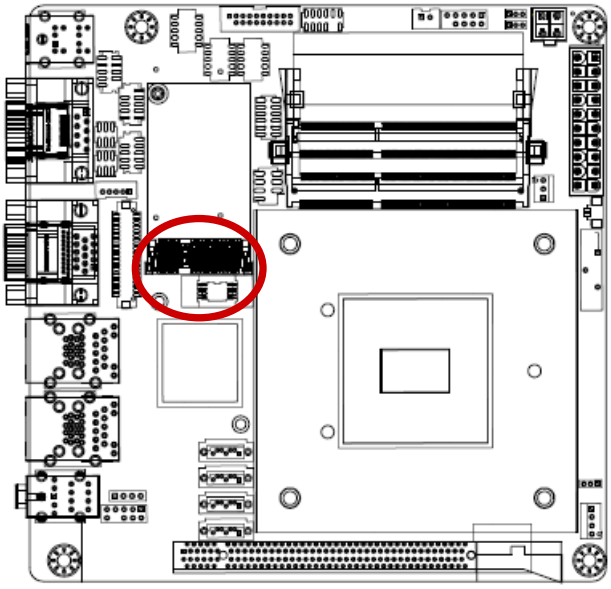
This motherboard supports one PCI Express x16 slot that complies with the PCI Express specifications. The following figure shows a graphics card installed on the PCI Express x16 slot.





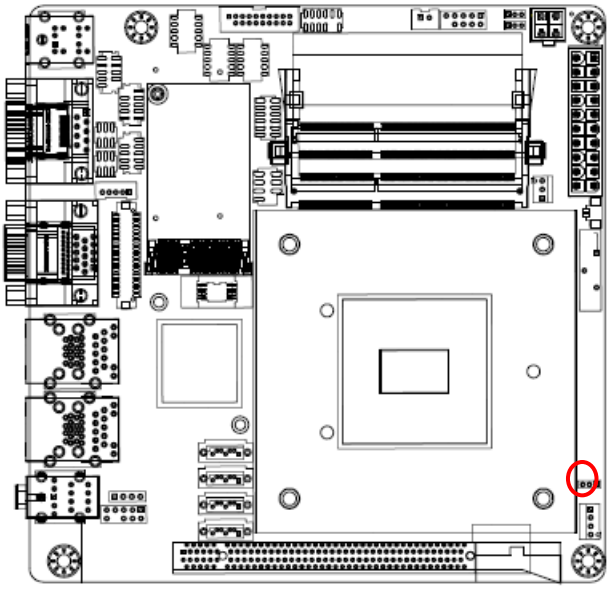
2.6.2.2 MiniPCI express slot

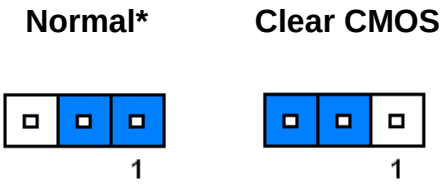
The miniPCIe express slot supports Mini cards for WiFi , Bluetooth, COM, USB modules, and other cards that comply with the mini Card Rev. 1.2 specifications . The figure below shows the type of full size SSD card that can be installed on a miniPCI express slot.



2.7 Setting Jumpers & Connectors

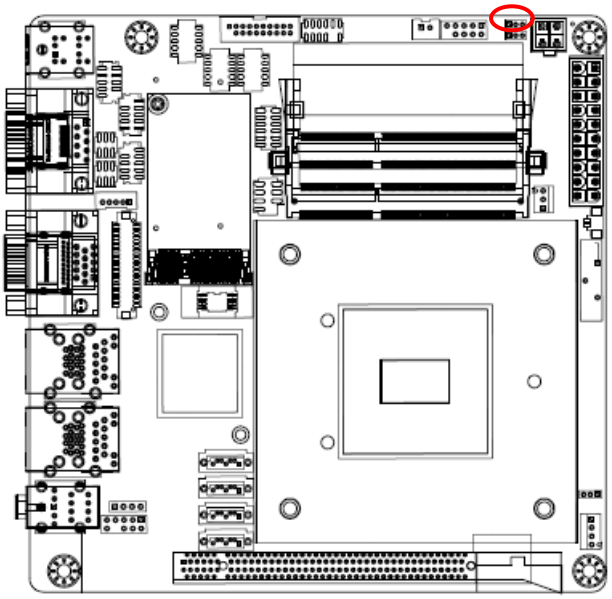
2.7.1 Clear CMOS Jumper (JCMOS1)

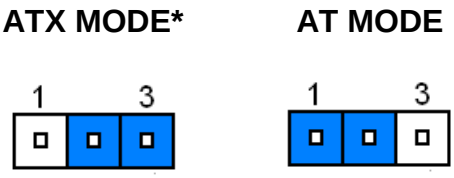




***Default**

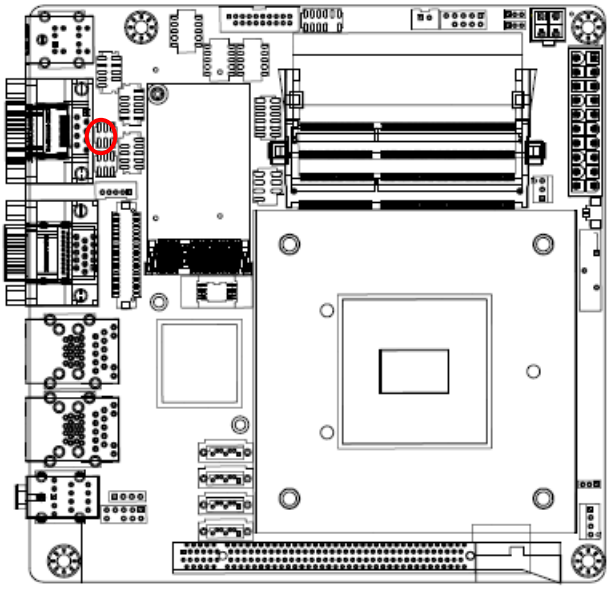
2.7.2 ATX/AT Mode Selection (JPSON1)



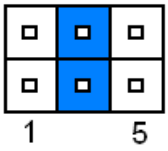


***Default**

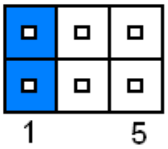
2.7.3 COM2 Ring-In/ +12V/ +5V Select (JCOMPWR1)



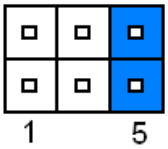
RI*



+12V

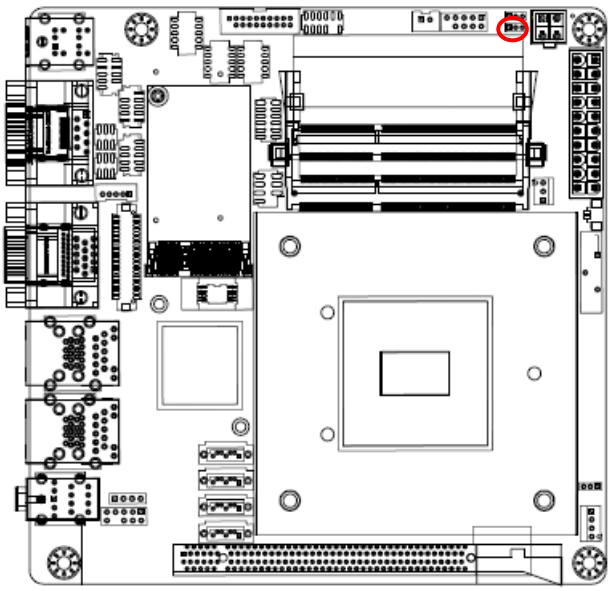


+5V

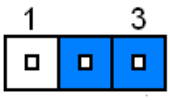


*** Default**

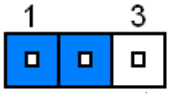
2.7.4 M-SATA/mini PCIe Selection (JMSATASW1)



Mini-PCIe*

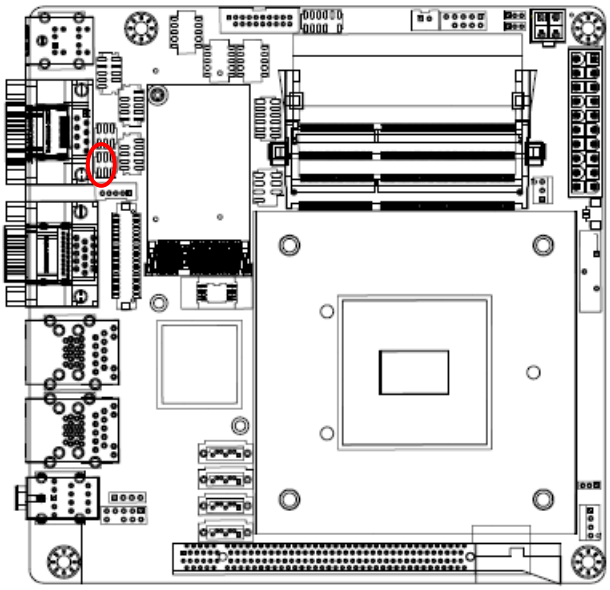


M-SATA

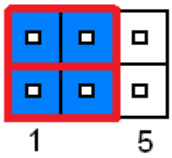


***Default**

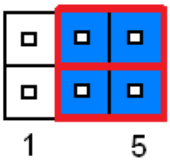
2.7.5 LCD Inverter Setting Connector (JLVDS_BKL1)



5V(Pin 1~3)*
Linear mode(Pin 2~4)*

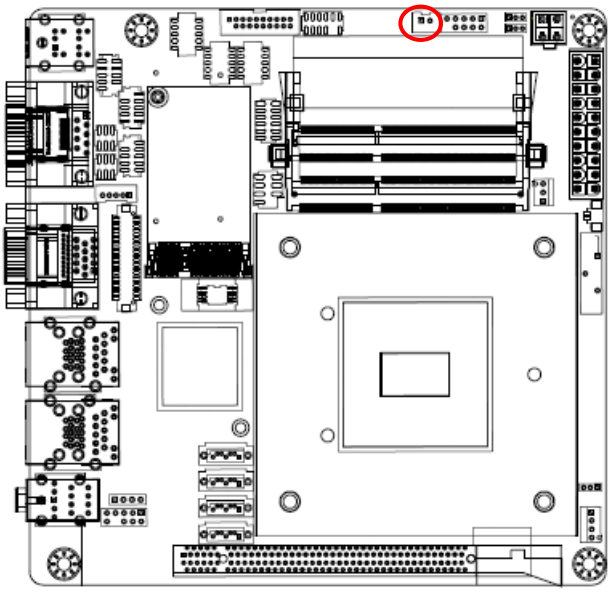


3.3V(Pin 3~5)*
PWM mode(Pin 4~6)



***Default**

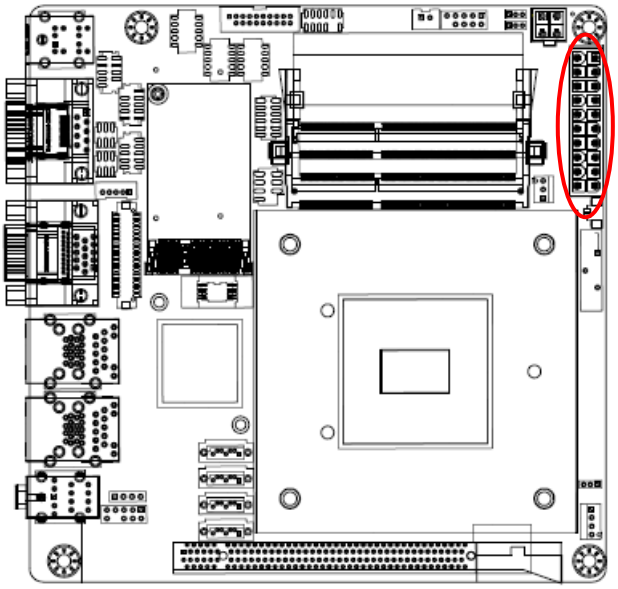
2.7.6 Chassis Intrusion Connector (JCASE1)

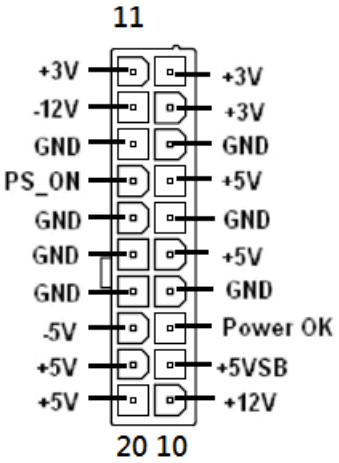


1. GND
2. Chassis Signal

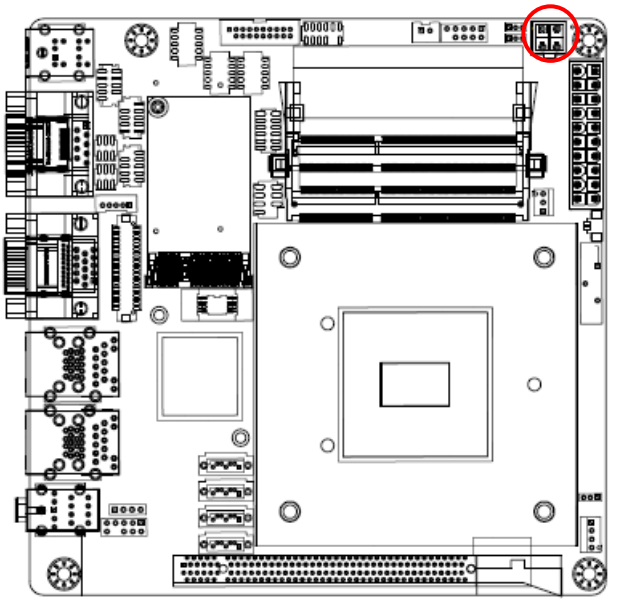
*** Default**

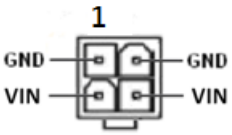
2.7.7 20pin ATX Power Connector (EATXPWR1)



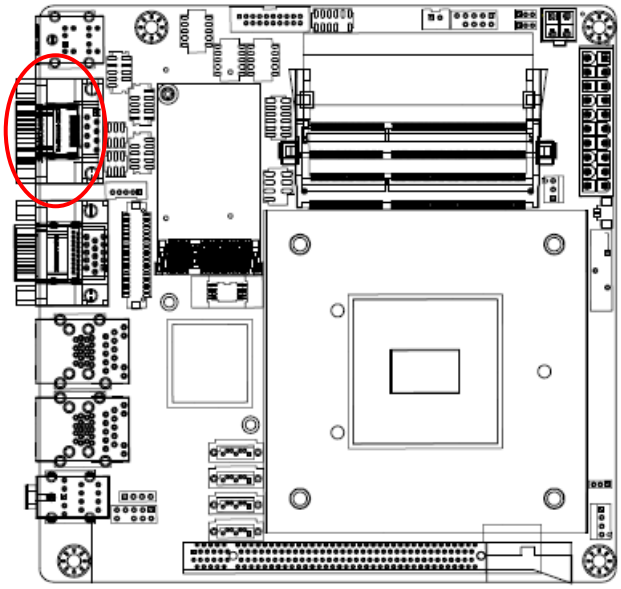


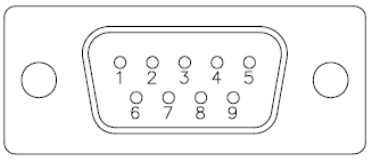
2.7.8 12V ATX Power Connector (ATX12V1)





2.7.9 Serial Port 1 Connector (COM1)





1. DCD 2.RXD
3. TXD 4. DTR
5. GND 6. DSR
7. RTS 8. CTS
9. RI

In RS-232 Mode

Signal	PIN	PIN	Signal
DCD	1	2	RXD
TXD	3	4	DTR
GND	5	6	DSR
RTS	7	8	CTS
RI	9		

In RS-422 Mode

Signal	PIN	PIN	Signal
TX-	1	2	TX+
RX+	3	4	RX-
GND	5	6	
	7	8	
	9		

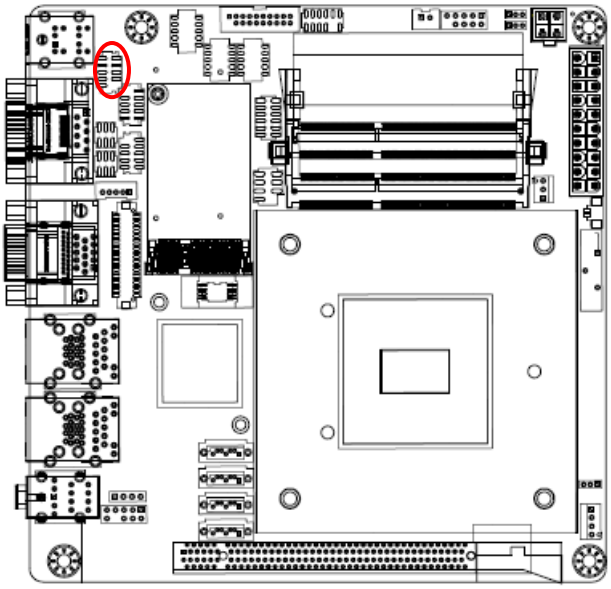
In RS-485 Mode

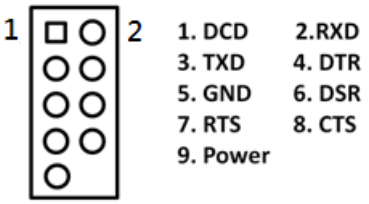
Signal	PIN	PIN	Signal
TX-	1	2	TX+
	3	4	
GND	5	6	
	7	8	
	9		

* RS232/RS422/RS485 Mode Change by BIOS Setup

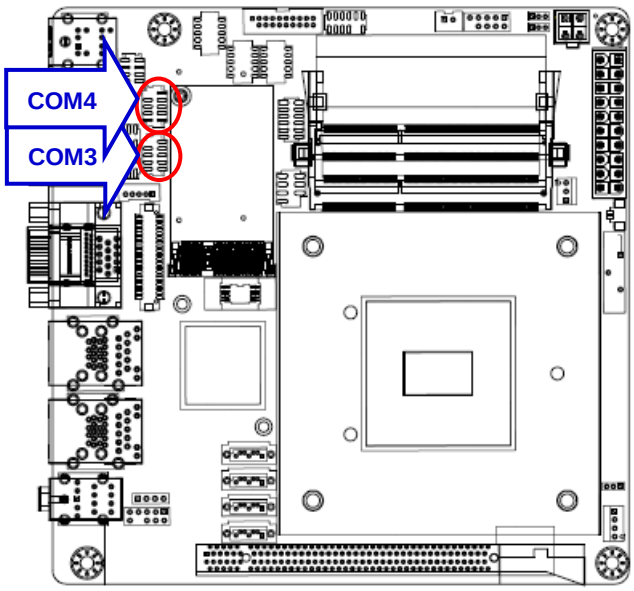
BIOS Setup→Advanced→NCT6106D Super IO Configuration

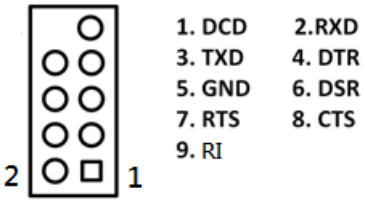
2.7.10 Serial Port 2 Connector (COM2)



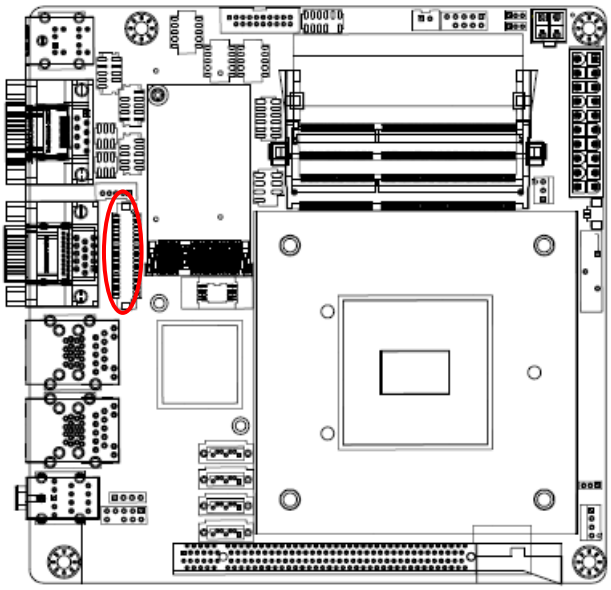


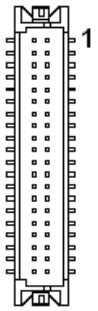
2.7.11 Serial Port 3~4 Connectors (COM3~4)





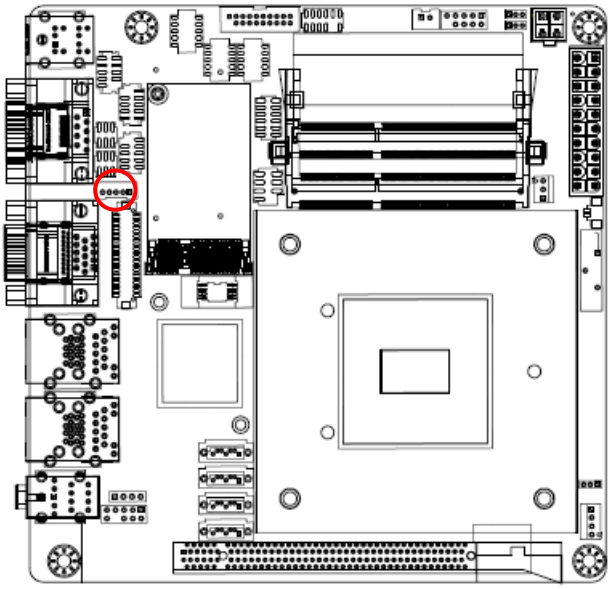
2.7.12 LVDS Connector (JLVDS1)

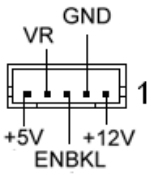




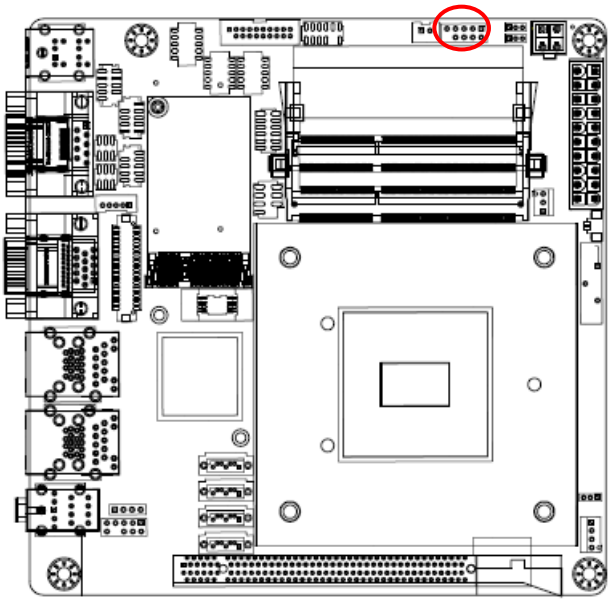
1. +3.3V	2. +5V
3. +3.3V	4. +5V
5. SC_DDC	6. SD_DDC
7. GND	8. GND
9. LVDS0_P1	10. LVDS0_P0
11. LVDS0_N1	12. LVDS0_N0
13. GND	14. GND
15. LVDS0_P3	16. LVDS0_P2
17. LVDS0_N3	18. LVDS0_N2
19. GND	20. GND
21. LVDS1_P1	22. LVDS1_P0
23. LVDS1_N1	24. LVDS1_N0
25. GND	26. GND
27. LVDS1_P3	28. LVDS1_P2
29. LVDS1_N3	30. LVDS1_N2
31. GND	32. GND
33. LVDS1_CLKP	34. LVDS0_CLKP
35. LVDS1_CLKN	36. LVDS0_CLKN
37. GND	38. GND
39. +12V	40. +12V

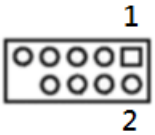
2.7.13 Back Light Controller Connector (JBKL1)





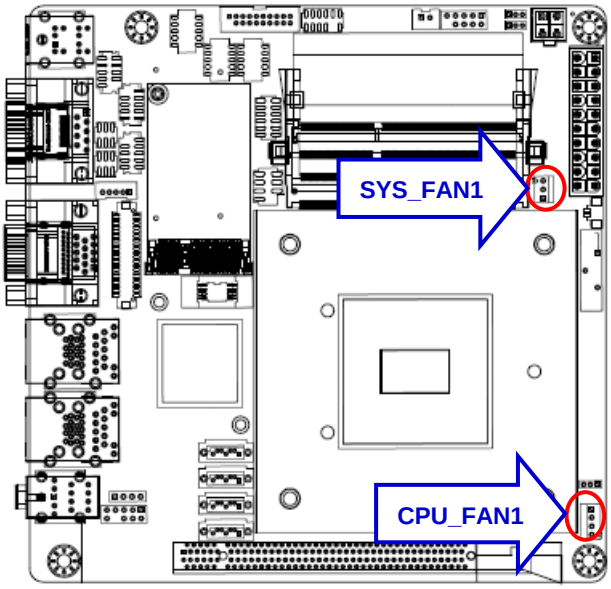
2.7.14 Front Panel Connector (F_PANEL)





1. HDD_LED+	2. POWER_LED+
3. HDD_LED-	4. POWER_LED-
5. GND	6. POWER SWITCH
7. RESET	8. GND
9. NC	

2.7.15 Fan Connectors (CPU_FAN1, SYS_FAN1)



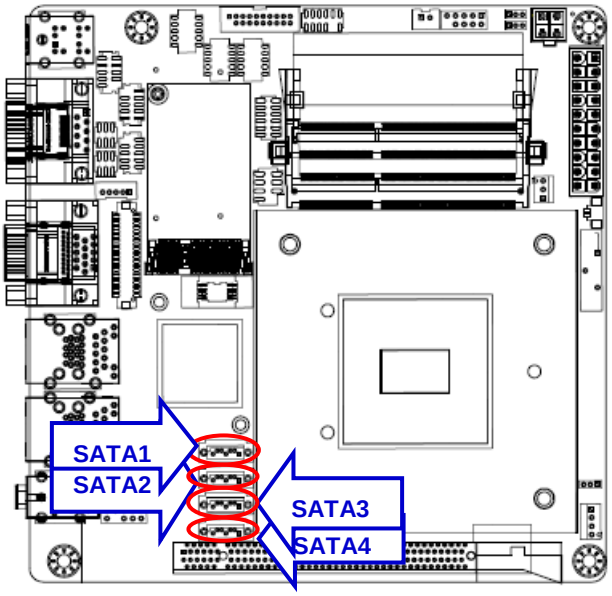
CPU_FAN1

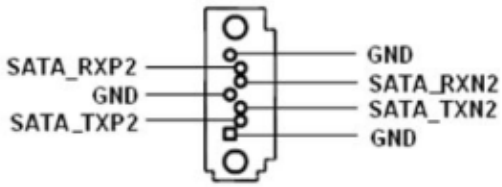
4. FAN_PWM1_C
3. FANCPUDEC1
2. +12V
1. GND

SYS_FAN1

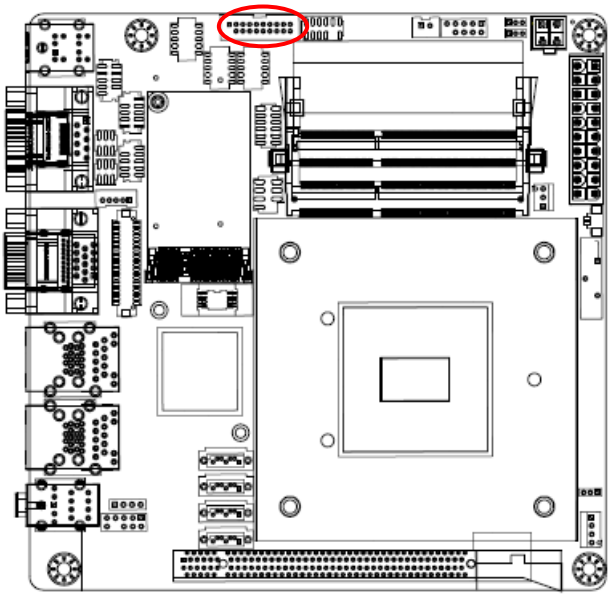
3. FANSYSDEC1
2. +12V
1. GND

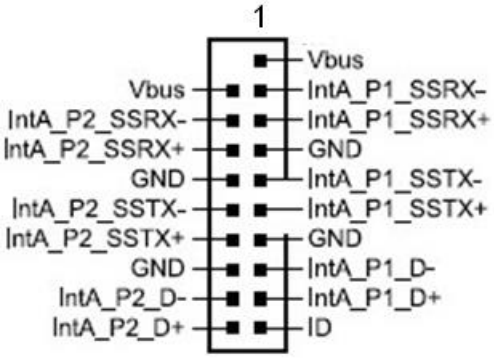
2.7.16 SATA Ports (SATA1~4)



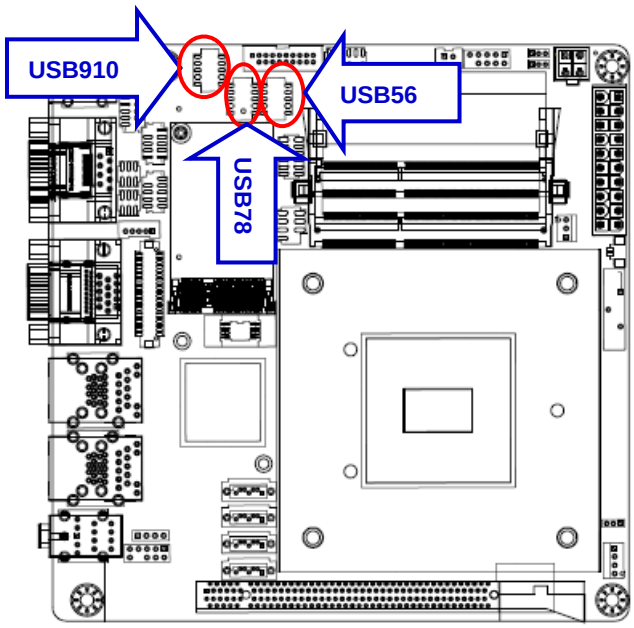


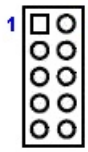
2.7.17 USB 3.0 Connector (USB1112)





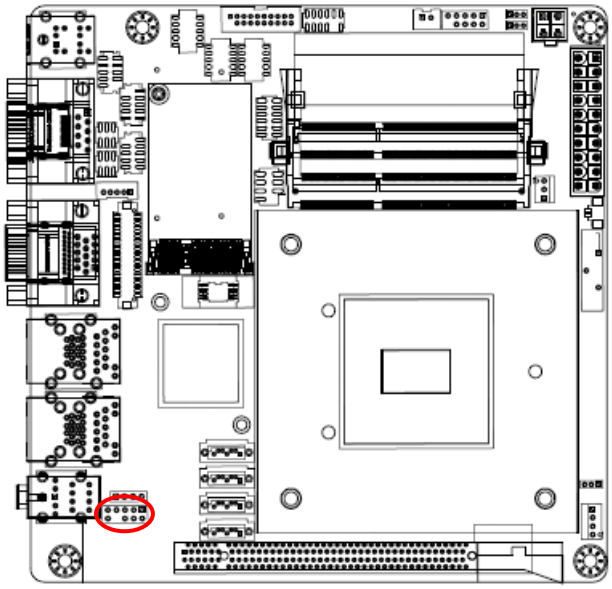
2.7.18 Front USB Headers (USB56, USB78, USB910)

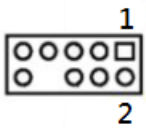




1. USB+5V	2. USB+5V
3. USB -	4. USB -
5. USB +	6. USB +
7. GND	8. GND
9. GND	10. GND

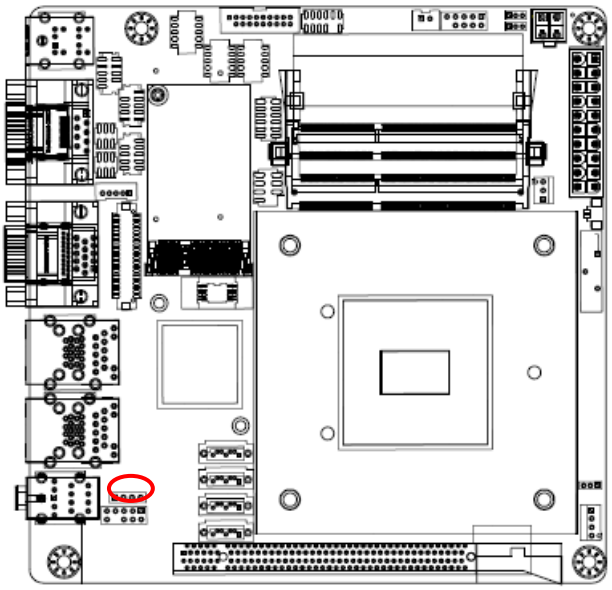
2.7.19 Front Panel Audio Connector (FP_AUDIO1)

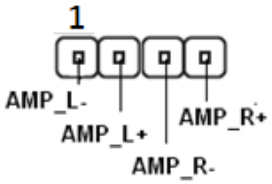




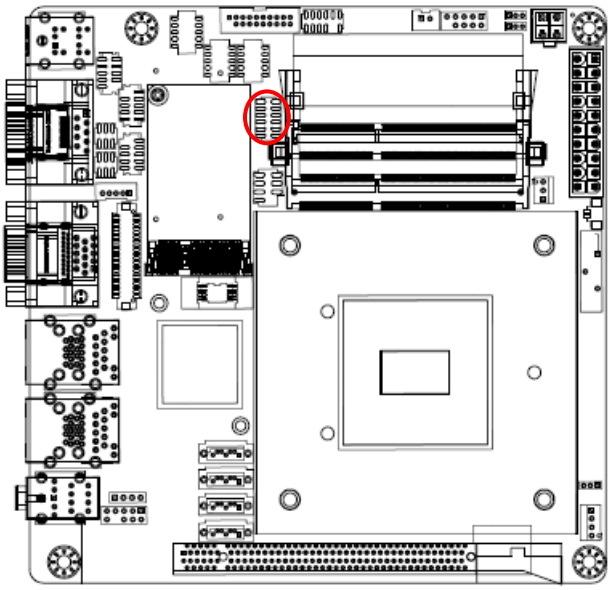
1. MIC2_L	2. GND
3. MIC2_R	4. PRESENSE
5. LIN2_R	6. SENSE1_RTN
7. SENSE_B	8. NC
9. LIN2_L	10. SENSE2_RTN

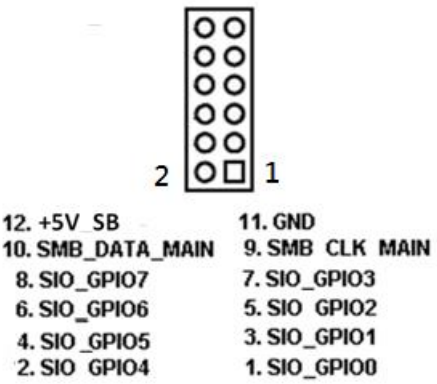
2.7.20 Amplifier Connector (JAMP1)



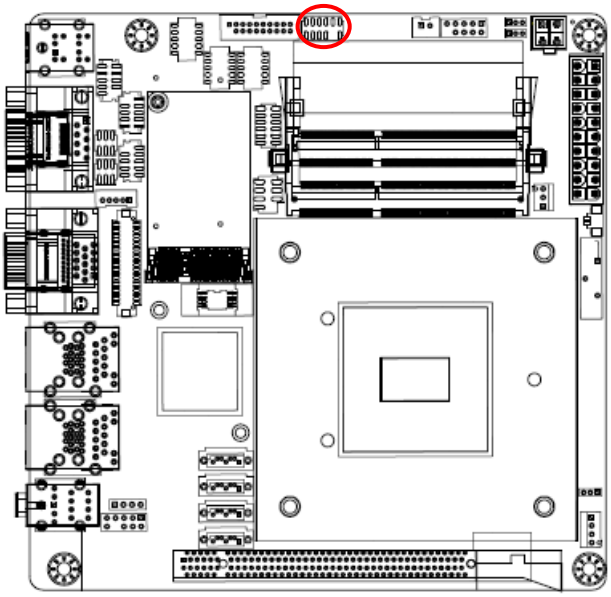


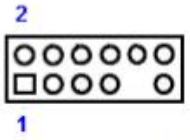
2.7.21 Digital I/O Connector (JDIO1)





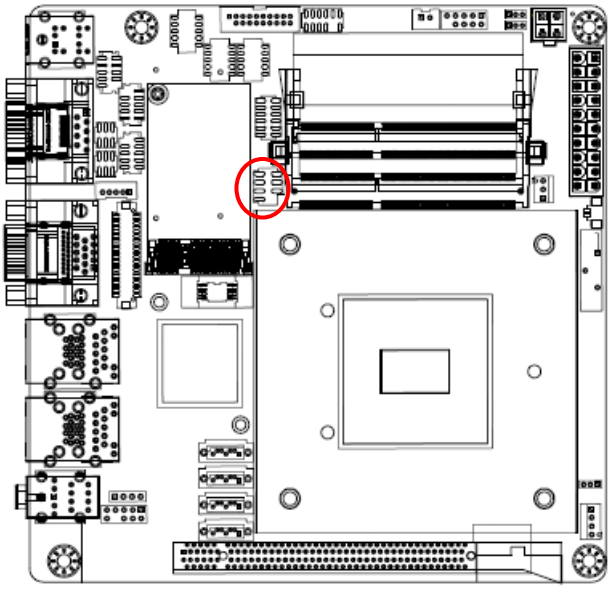
2.7.22 LPC Connector (JLPC1)





1.NC	2.+3.3V
3.LPC_AD3	4.PRST_SIO#
5.LPC_AD1	6.LPC_AD2
7.LPC_FRAME#	8.LPC_AD0
9.	10.GND
11.CLK33M_LPC	12.GND

2.7.23 SPI Connector (SPI1)



1.+3.3V	2.GND
3.SP1_CS#	4.SPI_CLK
5.SPI_MISO	6.SPI_MOSI
7.NC	8.NC

3. BIOS Setup

3.1 Introduction

The BIOS setup program allows users to modify the basic system configuration. This chapter describes how to access the BIOS setup program and the configuration options that may be changed.

3.2 Starting Setup

The BIOS is immediately activated when you first power on the computer. The BIOS reads the system information contained in the NVRAM and begins checking the system and configuring it. When it finishes, the BIOS seeks an operating system on one of the disks and then launch and turn control over to the operating system.

While the BIOS is in control, the Setup program can be activated in one of the two ways:
By pressing <Del> or <F2> key immediately after switching the system on, or
By pressing the <Del> or <F2> key when the following message appears briefly at the left top of the screen during the POST (Power On Self Test).

Press <DEL> or <F2> to enter setup

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to.

Press <F1> skip, <DEL> or <F2> Enter Setup

3.3 Using Setup

The keys in the legend bar allow you to navigate through the various setup menus

Button	Description
← →	Select Screen
↑ ↓	Select Item
+ -	Change Option / Field
Enter	Select
PGUP/HOME	Go to Top of Screen
PGDN/HOME	Go to Bottom of Screen
F1	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2	Previous Values
F3	Optimized defaults
F4	Save & Exit Setup
ESC	Exit

List Box

- This box appears only in the opening screen. The box displays an initial list of configurable items in the menu you selected.

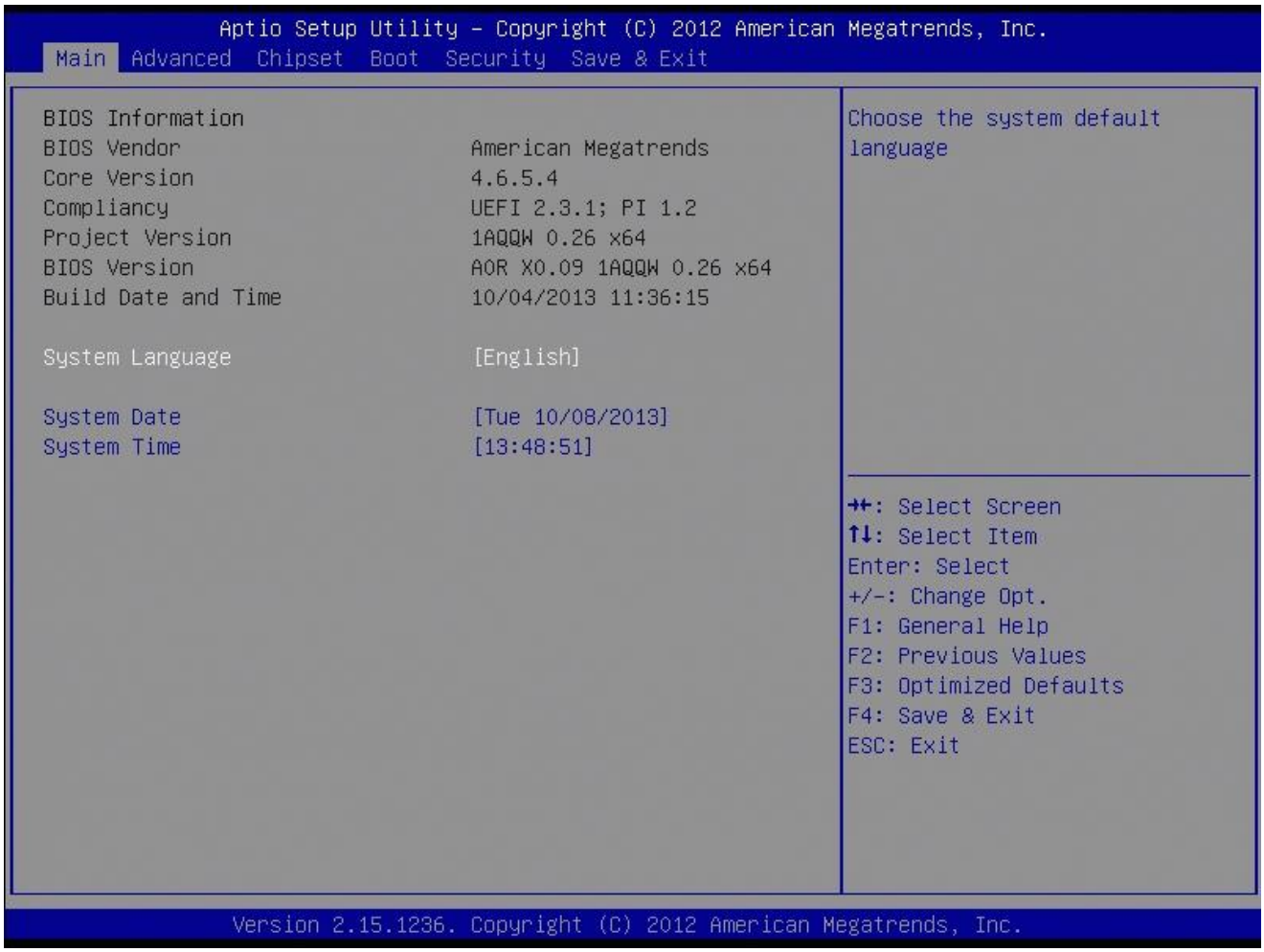
Sub-menu

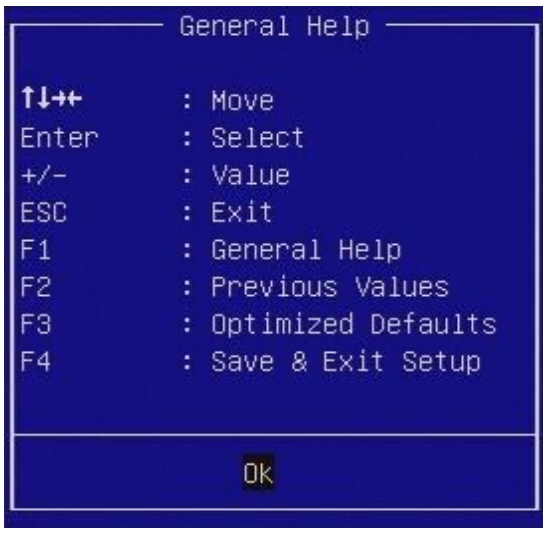
- Note that a right pointer symbol appears to the left of certain fields. This pointer indicates that you can display a sub-menu from this field. A sub-menu contains additional options for a field parameter. To display a sub-menu, move the highlight to the field and press <Enter>. The sub-menu appears. Use the legend keys to enter values and move from field to field within a sub-menu as you would within a menu. Use the <Esc> key to return to the main menu.

- Take some time to familiarize yourself with the legend keys and their corresponding functions. Practice navigating through the various menus and submenus. If you accidentally make unwanted changes to any of the fields, press <F3> to load the optimal default values. While moving around through the Setup program, note that explanations appear in the Item Specific Help window located to the right of each menu. This window displays the help text for the currently highlighted field.

3.4 BIOS Menu Screen

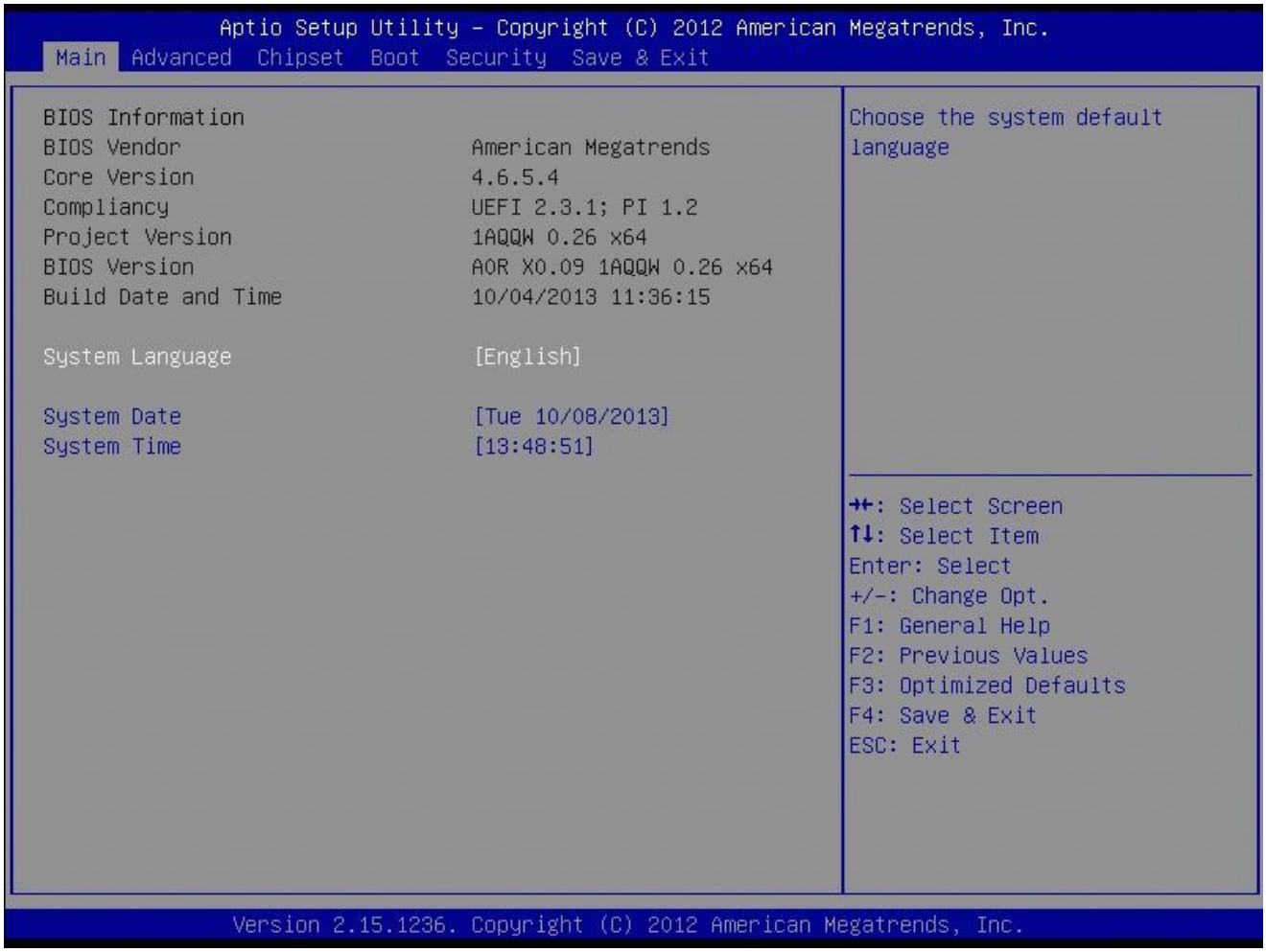
When you enter the BIOS, the following screen appears. The BIOS menu screen displays the items that allow you to make changes to the system configuration. To access the menu items, press the up/down/right/left arrow key on the keyboard until the desired item is highlighted, then press [Enter] to open the specific menu.


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
BIOS Information
BIOS Vendor American Megatrends
Core Version 4.6.5.4
Compliancy UEFI 2.3.1; PI 1.2
Project Version 1AQQW 0.26 x64
BIOS Version A0R X0.09 1AQQW 0.26 x64
Build Date and Time 10/04/2013 11:36:15
System Language [English]
System Date [Tue 10/08/2013]
System Time [13:48:51]
Choose the system default language
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.



3.4.1 Main Setup

This menu gives you an overview of the general system specifications. The BIOS automatically detects the items in this menu. Use this menu for basic system configurations, such as time, date etc.


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
BIOS Information
BIOS Vendor American Megatrends
Core Version 4.6.5.4
Compliancy UEFI 2.3.1; PI 1.2
Project Version 1AQQW 0.26 x64
BIOS Version A0R X0.09 1AQQW 0.26 x64
Build Date and Time 10/04/2013 11:36:15
System Language [English]
System Date [Tue 10/08/2013]
System Time [13:48:51]
Choose the system default language
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

- **BIOS Information**

Displays the auto-detected BIOS information.

- **System Date**

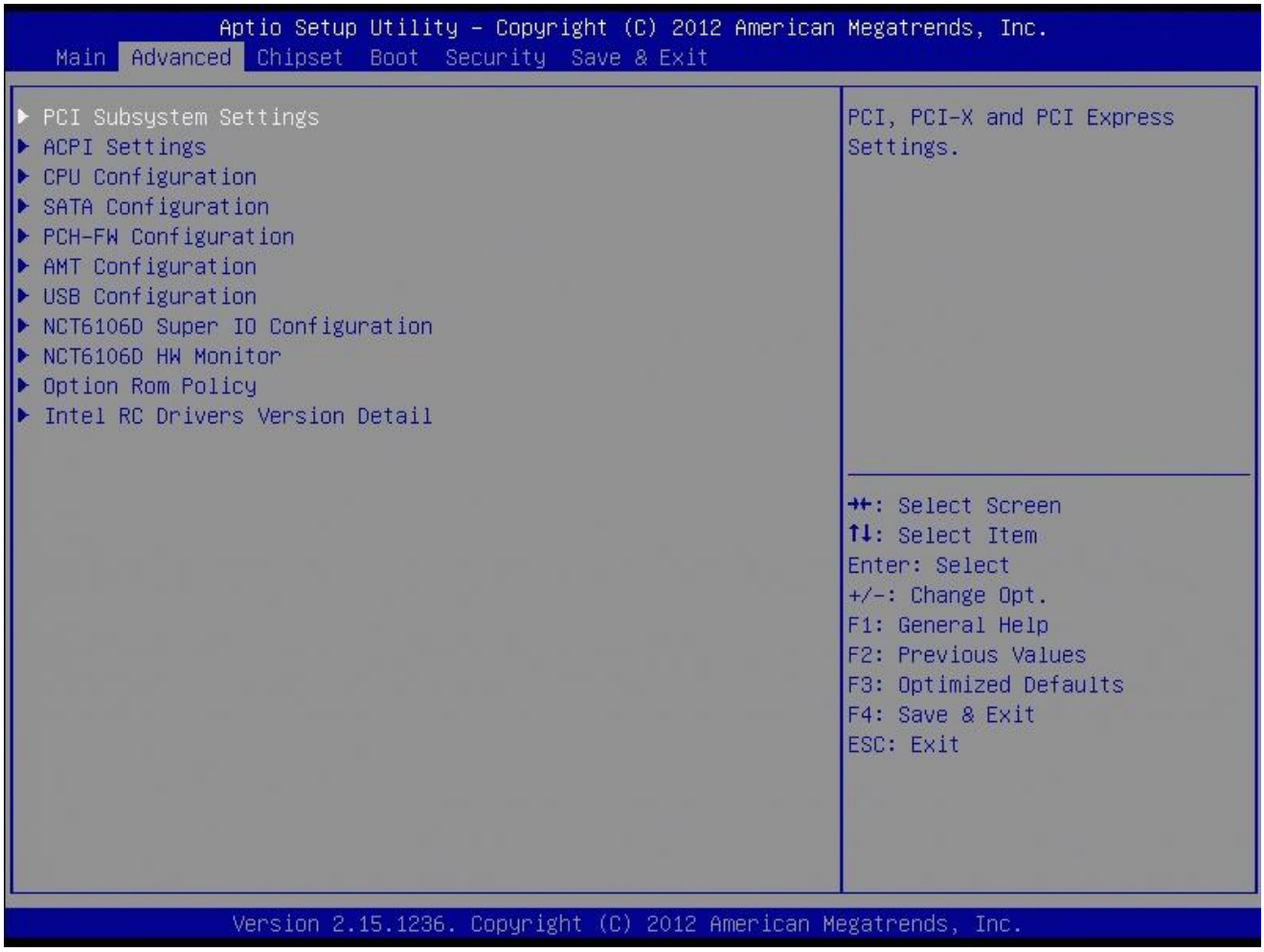
The date format is <Date>,<Month>,<Day>,<Year>.

- **System Time**

The time format is <Hour>,<Minute>,<Second>.

3.4.2 Advanced BIOS Setup

Select the Advanced tab from the setup screen to enter the Advanced BIOS Setup screen. You can select any of the items in the left frame of the screen, such as Chipset configuration, to go to the sub menu for that item. You can display an Advanced BIOS Setup option by highlighting it using the <Arrow> keys. All Advanced BIOS Setup options are described in this section. The Advanced BIOS Setup screen is shown below. The sub menus are described on the following pages.



Take caution when changing the settings of the Advanced menu items. Incorrect field values can cause the system to malfunction.

3.4.2.1 PCI Subsystem Setting

The PCI PnP menu items allow you to change the advanced settings for PCI/PnP devices.

Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Advanced
PCI Bus Driver Version V 2.05.02
PCI Common Settings
PCI Latency Timer [32 PCI Bus Clocks]
Value to be programmed into PCI Latency Timer Register.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

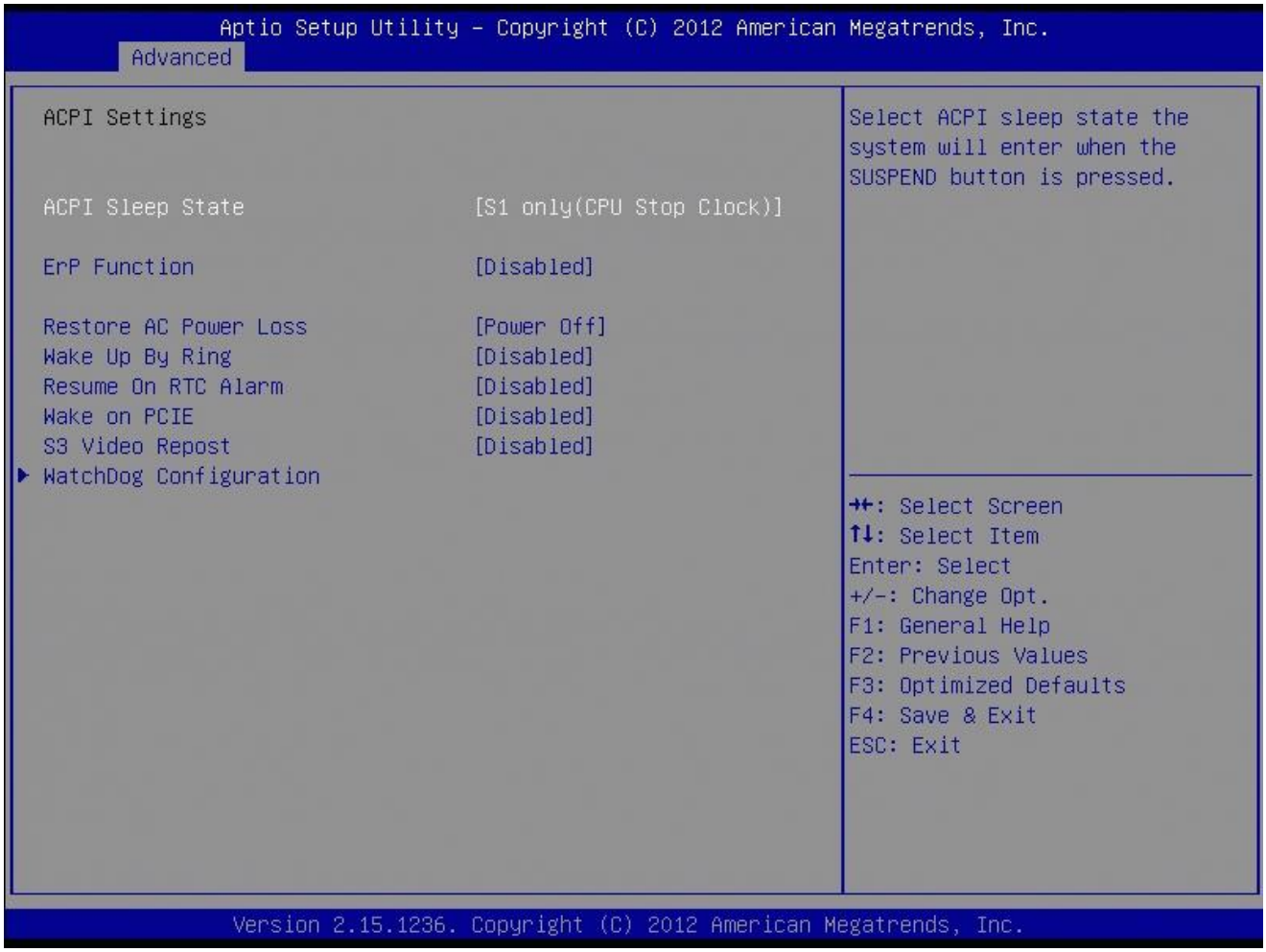
- **PCI Bus Driver Version**

Displays the information of PCI Bus Driver Version

- **PCI Latency Timer [32 PCI Bus Clocks]**

Configuration options: [32 PCI Bus Clocks] ~ [248 PCI Bus Clocks]

3.4.2.2 ACPI Settings


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Advanced
ACPI Settings
ACPI Sleep State [S1 only(CPU Stop Clock)]
ErP Function [Disabled]
Restore AC Power Loss [Power Off]
Wake Up By Ring [Disabled]
Resume On RTC Alarm [Disabled]
Wake on PCIE [Disabled]
S3 Video Repost [Disabled]
WatchDog Configuration
Select ACPI sleep state the system will enter when the SUSPEND button is pressed.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

- **ACPI Sleep State [S1 only (CPU Stop Clock)]**

Select the highest ACPI sleep state the system will enter the SUSPEND button is press.
Configuration options: [Suspend Disable][S1 (CPU Stop Clock)] [S3 (suspend to RAM)]

- **Erp Function [Disabled]**

Configuration options: [Disabled] [Enabled]

- **Restore AC Power Loss [Power Off]**

Specify what state to go to when power is re-applied after a power failure(G3 state).
Configuration options: [Power Off] [Power On] [Last state]

- **Wake Up By Ring [Disabled]**

Configuration options: [Disabled] [Enabled]

- **Resume On RTC Alarm [Disabled]**

Enable or disable system wake on alarm even. When enabled, system will wake upon the hr/min/sec specified. Configuration options: [Disabled] [Enabled]

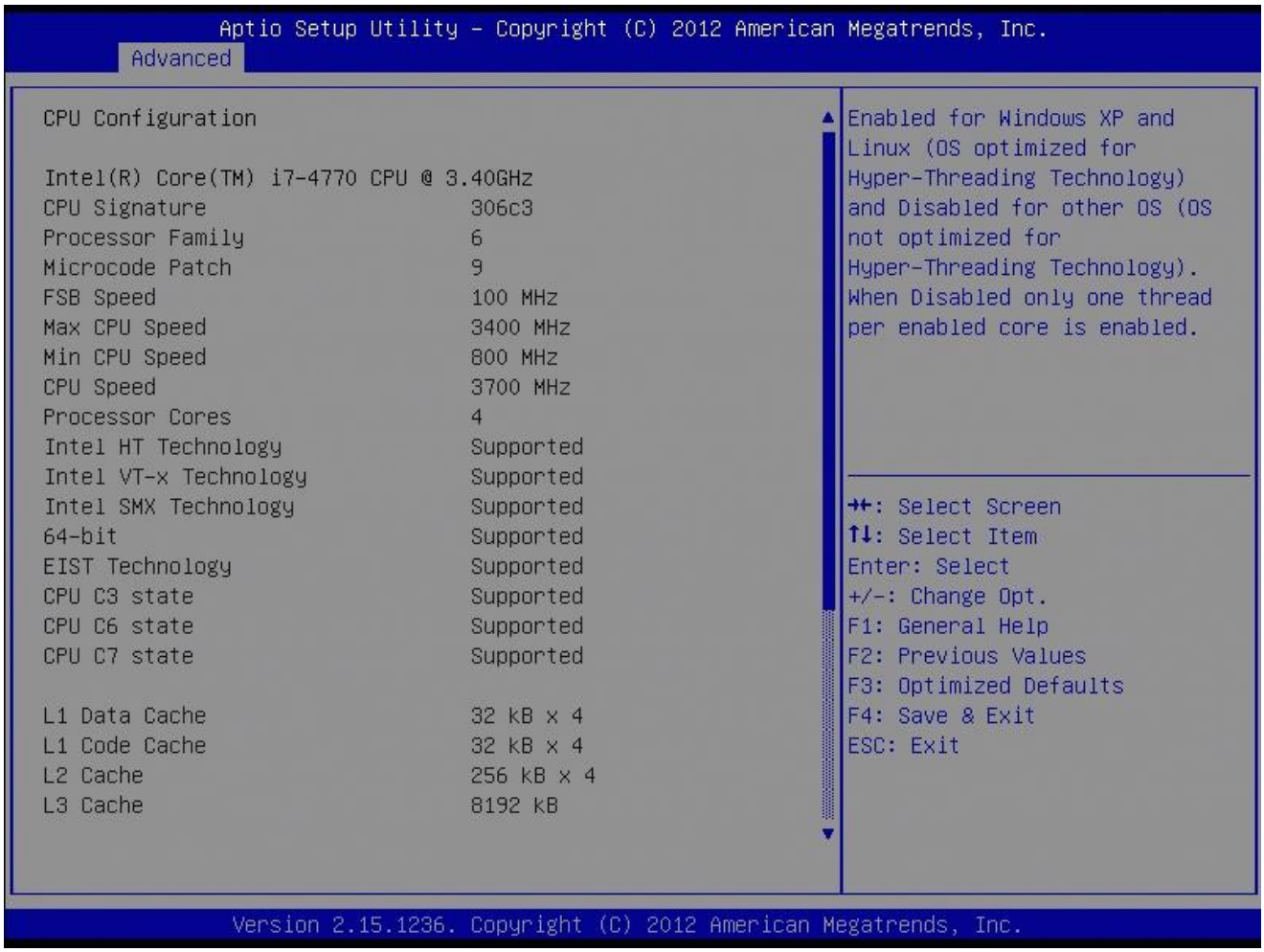
- **Wake on PCIE [Disabled]**

Configuration options: [Disabled] [Enabled]

- **S3 Video Repost [Disabled]**

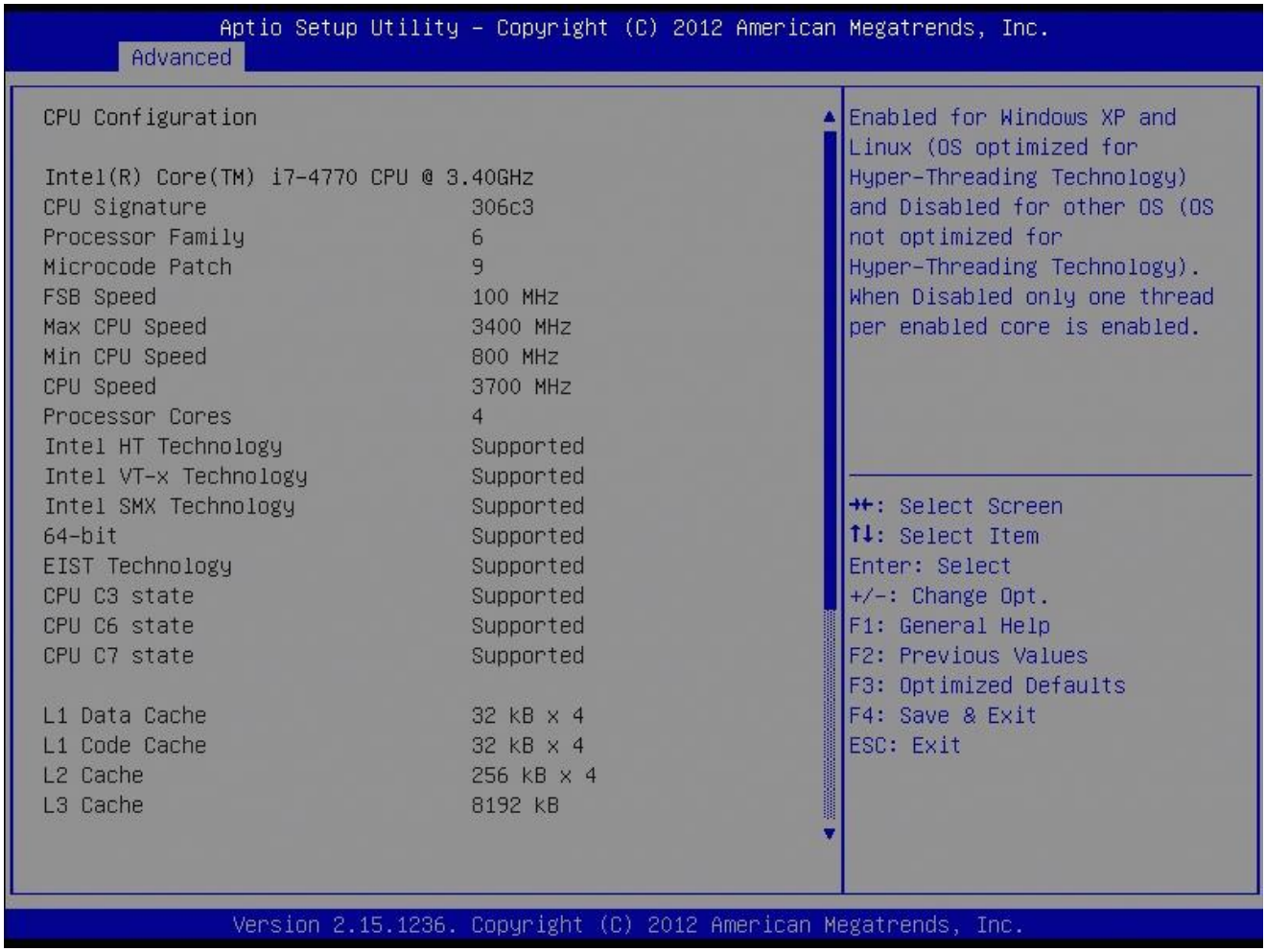
Allows you to determine whether to invoke VGA BIOS POST on S3/STR resume.
Configuration options: [Disabled] [Enabled]

3.4.2.3 CPU configuration


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Advanced
CPU Configuration
Intel(R) Core(TM) i7-4770 CPU @ 3.40GHz
CPU Signature 306c3
Processor Family 6
Microcode Patch 9
FSB Speed 100 MHz
Max CPU Speed 3400 MHz
Min CPU Speed 800 MHz
CPU Speed 3700 MHz
Processor Cores 4
Intel HT Technology Supported
Intel VT-x Technology Supported
Intel SMX Technology Supported
64-bit Supported
EIST Technology Supported
CPU C3 state Supported
CPU C6 state Supported
CPU C7 state Supported
L1 Data Cache 32 kB x 4
L1 Code Cache 32 kB x 4
L2 Cache 256 kB x 4
L3 Cache 8192 kB
Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology). When Disabled only one thread per enabled core is enabled.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

- **CPU configuration**

Displays the CPU information


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Advanced
CPU Configuration
Intel(R) Core(TM) i7-4770 CPU @ 3.40GHz
CPU Signature 306c3
Processor Family 6
Microcode Patch 9
FSB Speed 100 MHz
Max CPU Speed 3400 MHz
Min CPU Speed 800 MHz
CPU Speed 3700 MHz
Processor Cores 4
Intel HT Technology Supported
Intel VT-x Technology Supported
Intel SMX Technology Supported
64-bit Supported
EIST Technology Supported
CPU C3 state Supported
CPU C6 state Supported
CPU C7 state Supported
L1 Data Cache 32 kB x 4
L1 Code Cache 32 kB x 4
L2 Cache 256 kB x 4
L3 Cache 8192 kB
Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology). When Disabled only one thread per enabled core is enabled.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

- **Hyper-threading [Enabled]**

Configuration options: [Disabled] [Enabled]

- **Active Processor Cores [All]**

Select the numbers of cores in each processor package.

Configuration options: [All] [1] [2] [3] [4] [5] [6] [7]

It depends on each CPU type.

- **Intel Virtualization Technology** [Enabled]

When enable, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

Configuration options: [Disabled] [Enabled]

- **EIST [Enabled]**

Enable or disable speed step.

Configuration options: [Disabled] [Enabled]

- **Turbo Mode [Enabled]**

Configuration options: [Disabled] [Enabled]

- **CPU C States [Enabled]**

Configuration options: [Disabled] [Enabled]

- **Enhanced C1 States [Enabled]**

Configuration options: [Disabled] [Enabled]

- **CPU C3 Report [Enabled]**

Use this to enable or disable CPU C3 report to OS.

Configuration options: [Disabled] [Enabled]

- **CPU C6 Report [Enabled]**

Use this to enable or disable CPU C6 report to OS.

Configuration options: [Disabled] [Enabled]

- **CPU C7 Report [CPU C7s]**

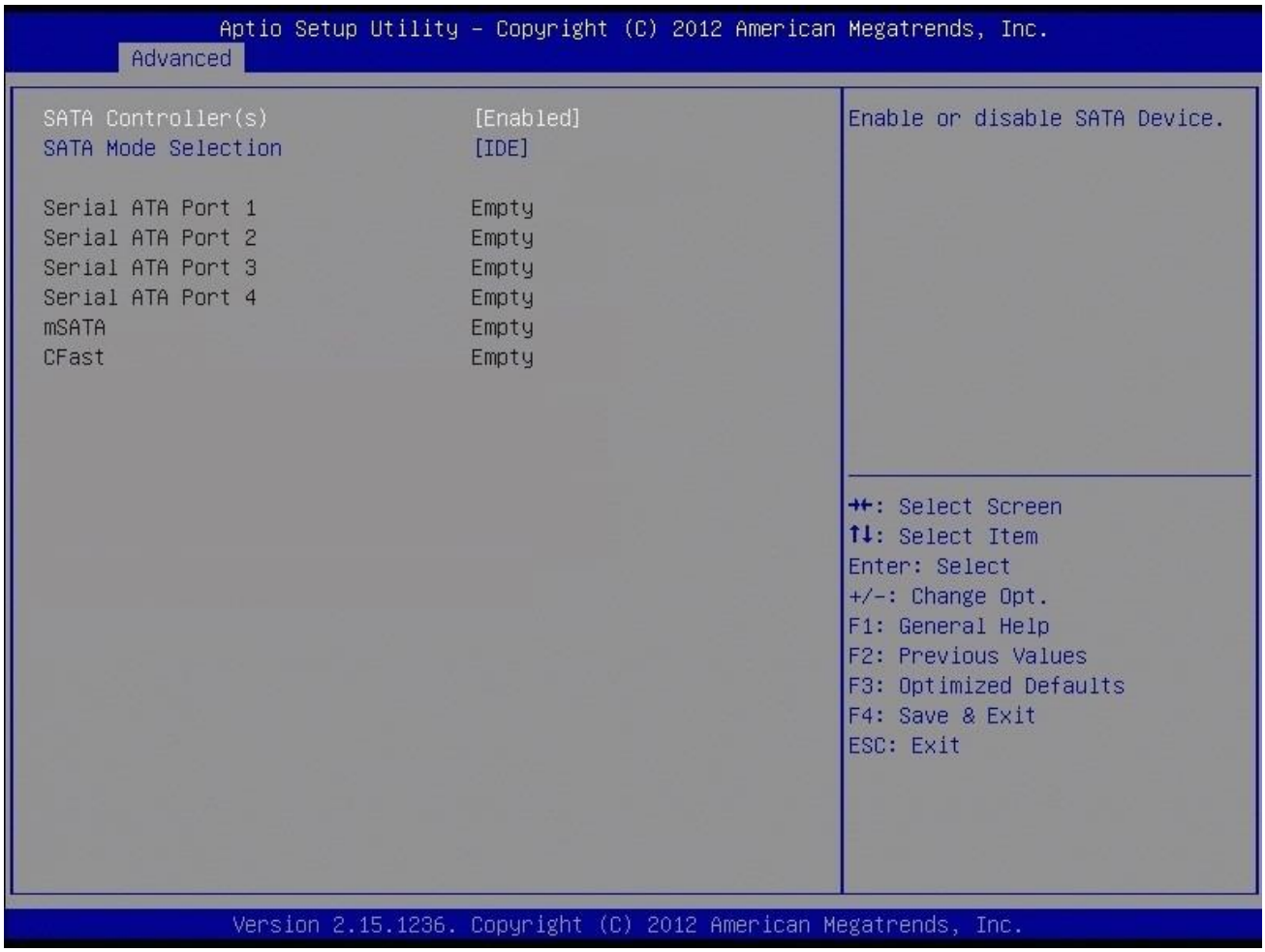
Use this to enable or disable CPU C7 report to OS.

Configuration options: [Disabled] [CPU C7] [CPU C7s]

- **Package C State limit [Auto]**
- **Intel TXT(LT) Support [Enable]**

Configuration options: [Disabled] [Enabled]

3.4.2.4 SATA Configuration



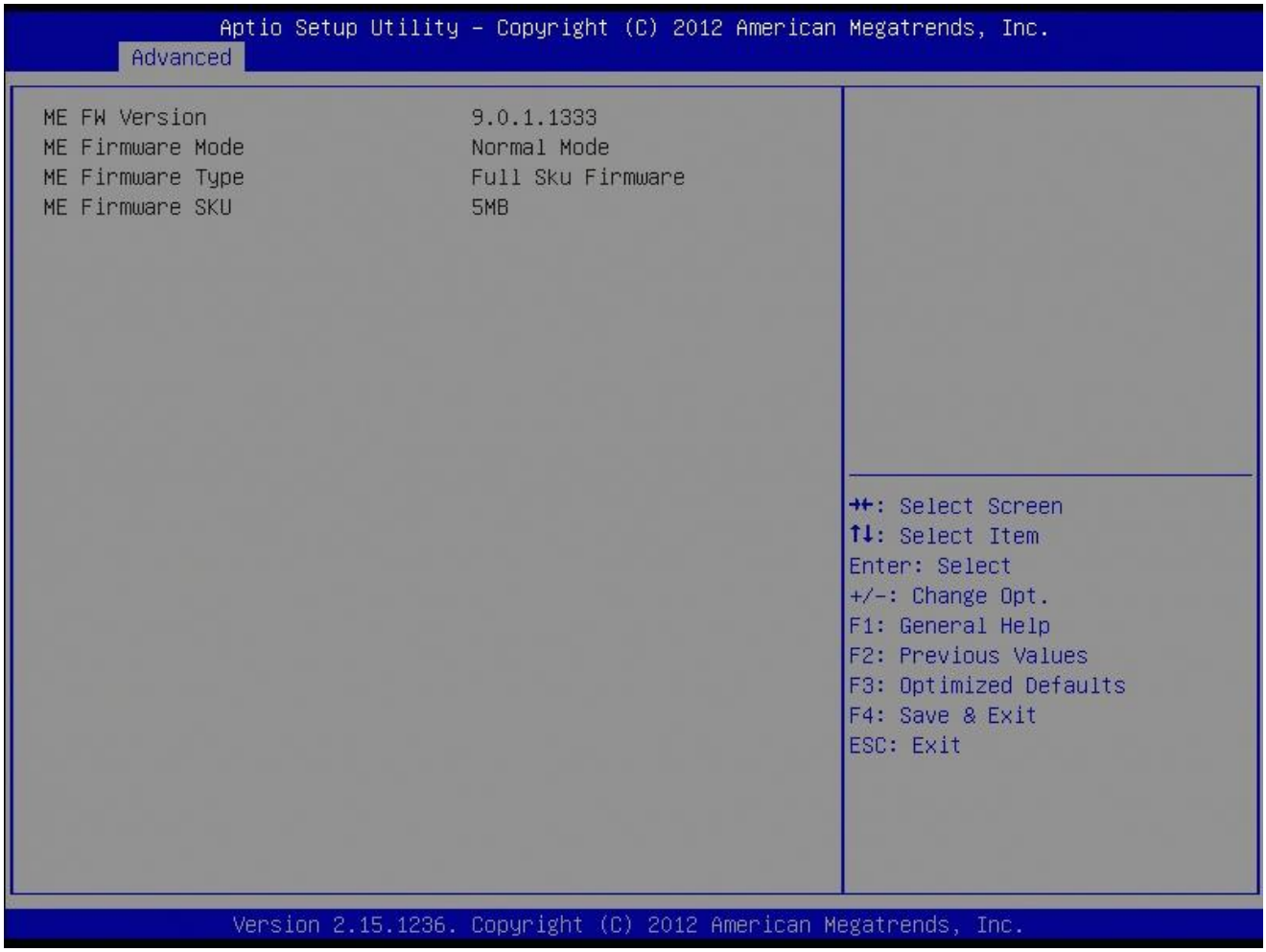
- **Serial-ATA Controller(s) [Enabled]**

Enabled/Disabled Serial-ATA Controller 0
Configuration options: [Disabled] [Enabled]

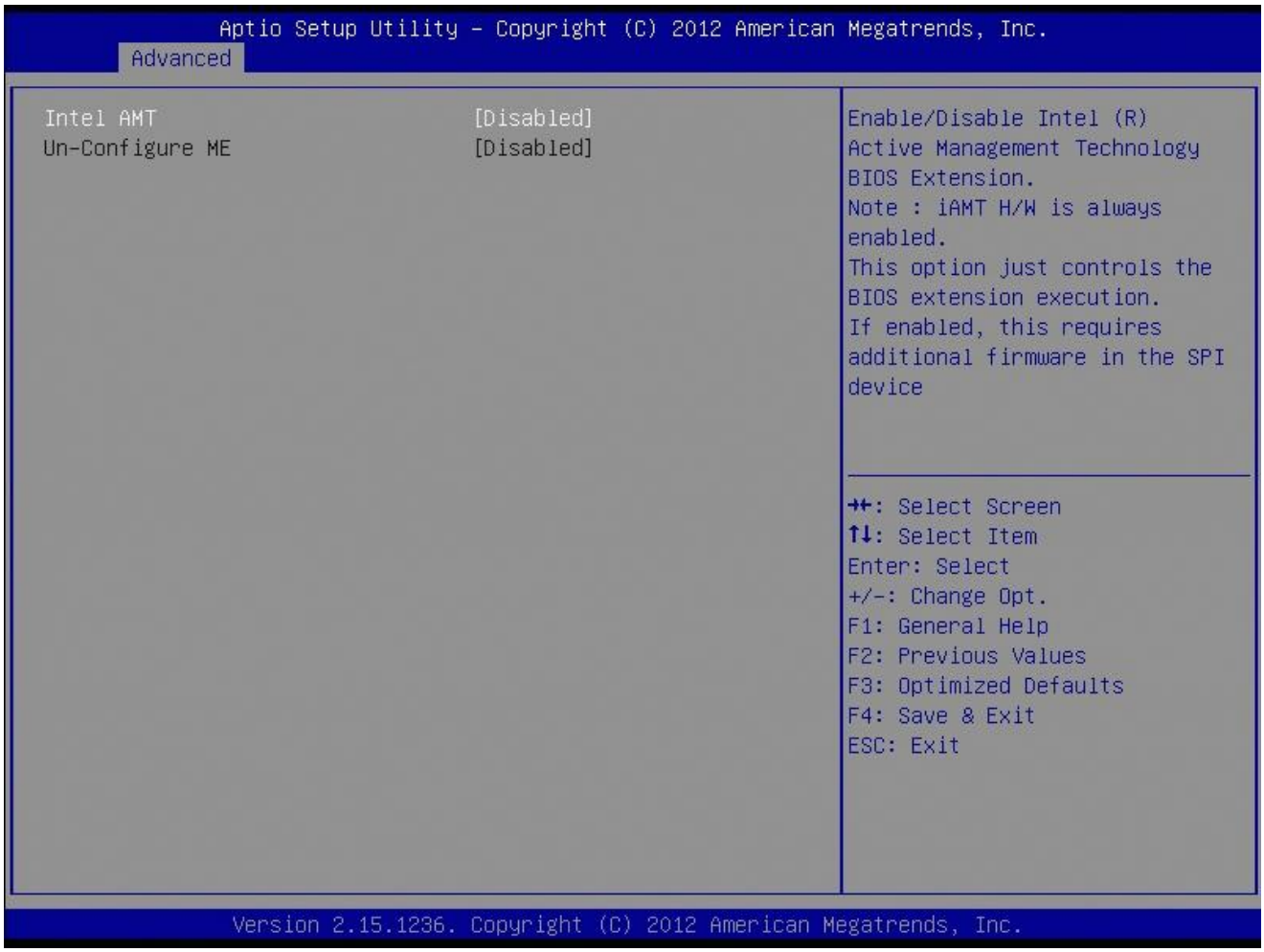
- **SATA Mode [IDE]**

Support IDE, AHCI or RAID mode
Configuration options: [IDE][AHCI][RAID]

3.4.2.5 PCH-FW Configuration


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Advanced
ME FW Version 9.0.1.1333
ME Firmware Mode Normal Mode
ME Firmware Type Full Sku Firmware
ME Firmware SKU 5MB
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

3.4.2.6 AMT Configuration


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Advanced
Intel AMT [Disabled]
Un-Configure ME [Disabled]
Enable/Disable Intel (R) Active Management Technology BIOS Extension.
Note : iAMT H/W is always enabled.
This option just controls the BIOS extension execution.
If enabled, this requires additional firmware in the SPI device
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

- **Intel AMT [Enabled]**

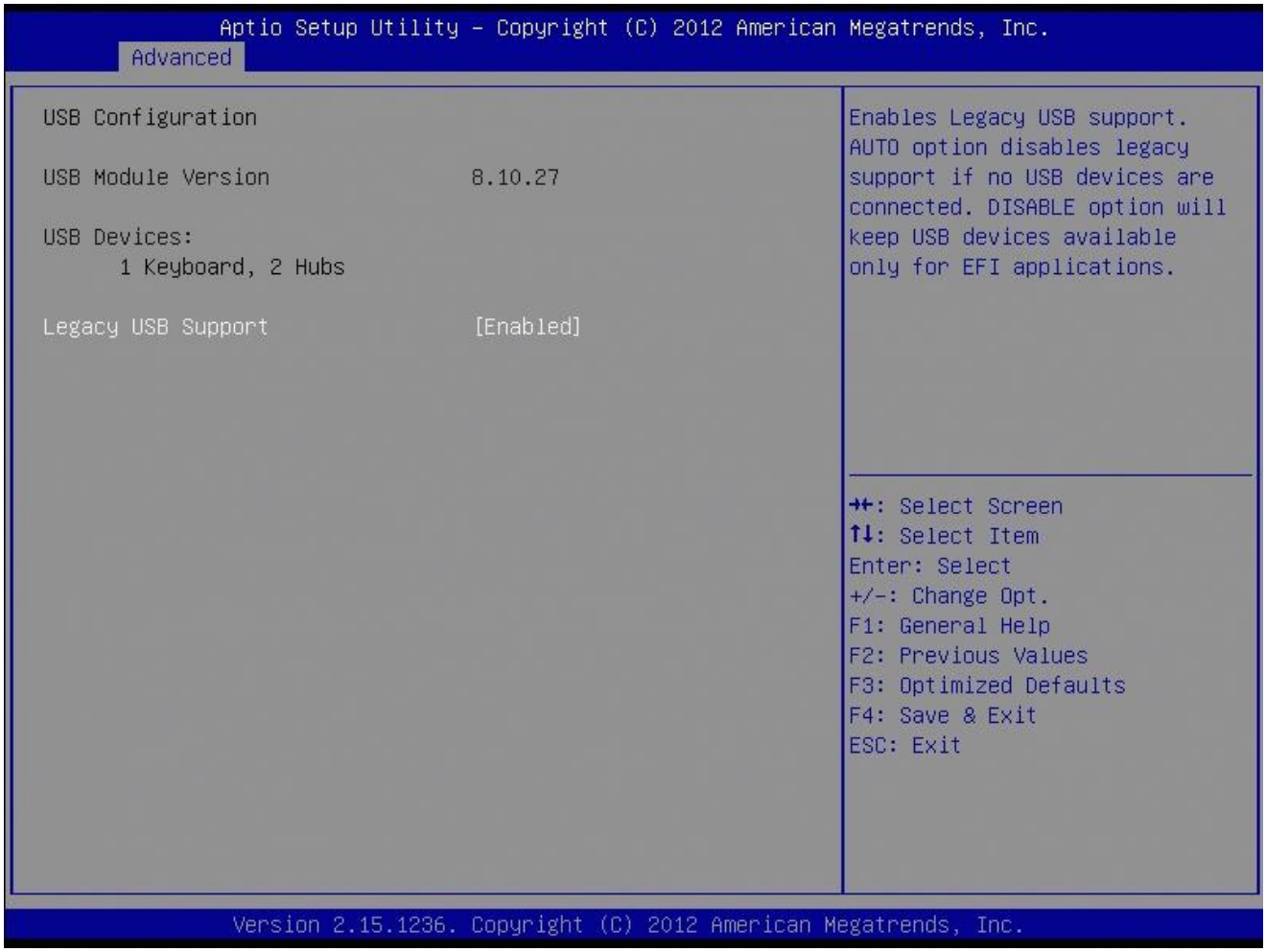
Configuration options: [Disabled] [Enabled]

- **Un-Configure ME [Disabled]**

Configuration options: [Disabled] [Enabled]

3.4.2.7 USB Configuration

USB Configuration Parameters


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Advanced
USB Configuration
USB Module Version 8.10.27
USB Devices:
1 Keyboard, 2 Hubs
Legacy USB Support [Enabled]
Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

- **USB Device**

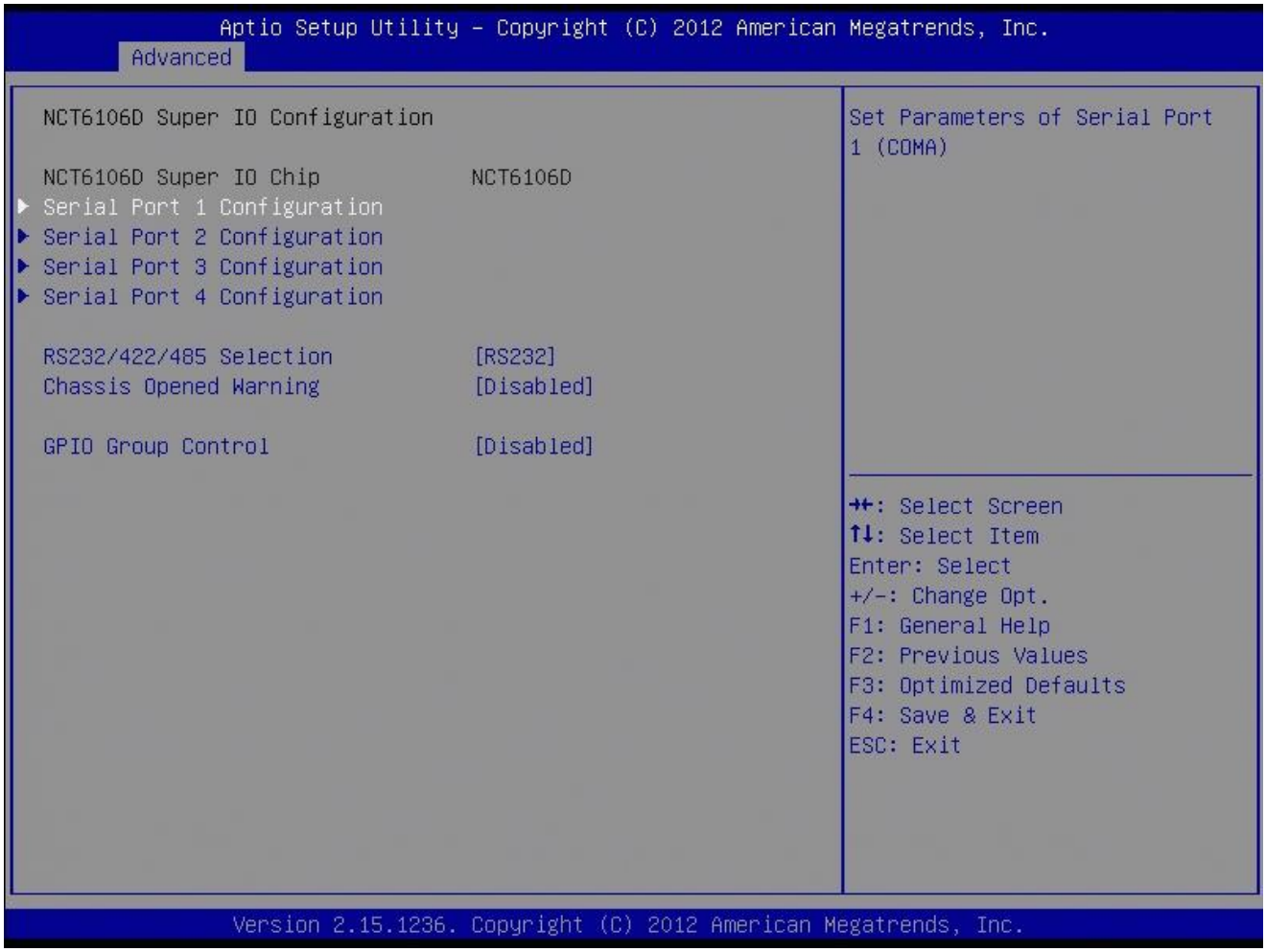
Display how many devices are connected.

- **Legacy USB Support [Enabled]**

Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. Disabled option will keep USB devices available only for EFI applications. Configuration options: [Enabled] [Disabled][Auto]

3.4.2.8 NCT6106D Super IO Configuration

System Super IO Chip Parameters.


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Advanced
NCT6106D Super IO Configuration
NCT6106D Super IO Chip NCT6106D
Serial Port 1 Configuration
Serial Port 2 Configuration
Serial Port 3 Configuration
Serial Port 4 Configuration
RS232/422/485 Selection [RS232]
Chassis Opened Warning [Disabled]
GPIO Group Control [Disabled]
Set Parameters of Serial Port 1 (COMA)
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

Super IO Configuration

Super IO Chip [NCT6106D]

- **RS232/422/485 Selection [RS232]**

Configuration options: [RS232][RS422 HALF DUPLEX][RS485/RS422 FULL DUPLEX]

- **Chassis Opened Warning [Disabled]**

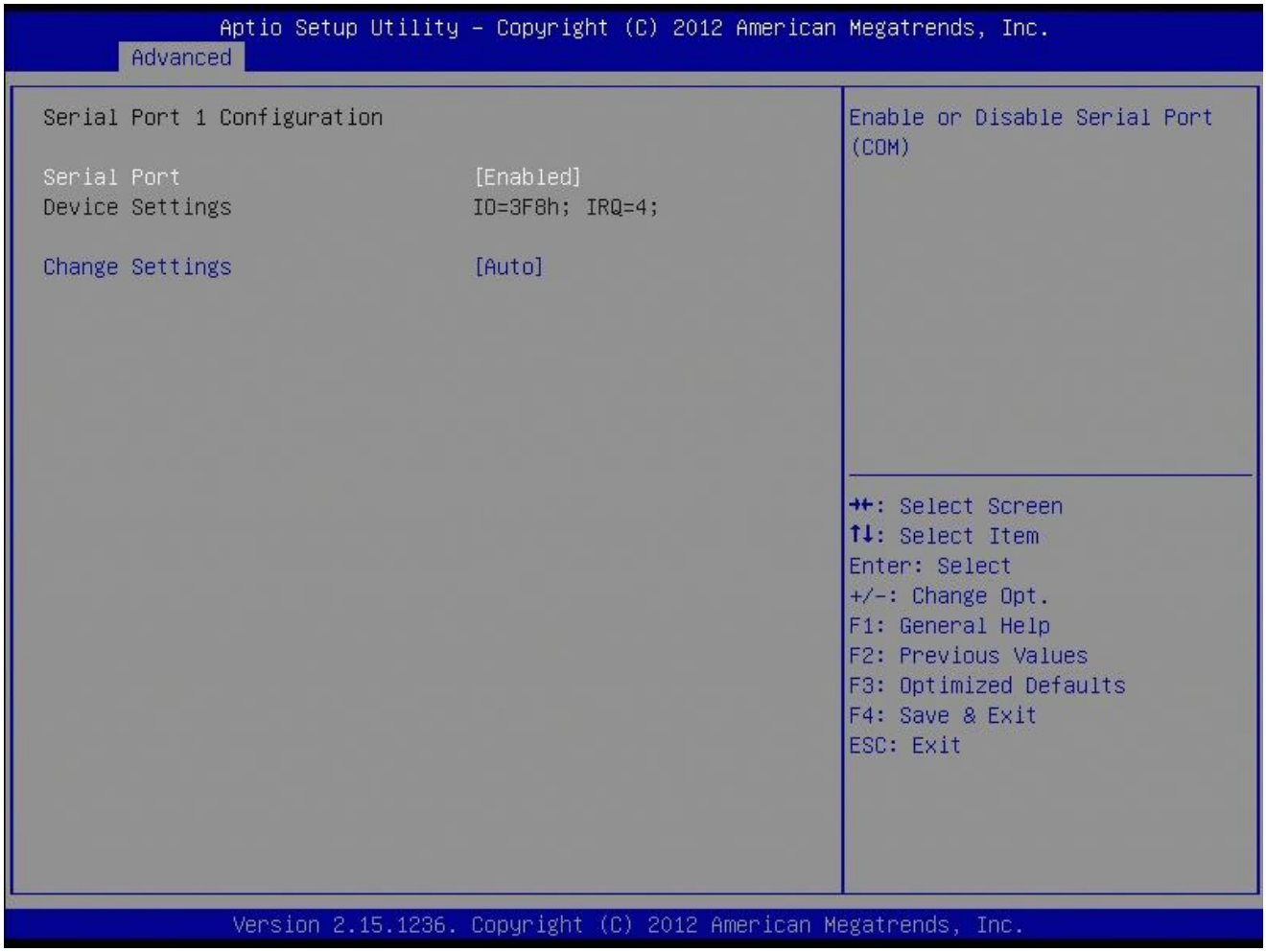
Configuration options: [Enabled] [Disabled]

- **GPIO Group Control [Disabled]**

Configuration options: [Enabled] [Disabled]

3.4.2.8.1 Serial Port 1 configuration

Set Parameters of Serial Port 1



Serial Port 1 Configuration

- **Serial Port [Enabled]**

Enable or Disable Serial Port.

Configuration options: [Disabled] [Enabled]

- **Device Setting [IO=3F8h; IRQ=4]**

- **Change Setting[Auto]**

Select an optimal setting for Super IO device.

Configuration options: [Auto] [IO=3F8h; IRQ=4] [IO=3F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12] [IO=2F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12][IO=3E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12] [IO=2E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12]

3.4.2.8.2 Serial Port 2 configuration

Set Parameters of Serial Port 2

Serial Port 2 Configuration

- **Serial Port [Enabled]**

Enable or Disable Serial Port.

Configuration options: [Disabled] [Enabled]

- **Device Setting [IO=2F8h; IRQ=3]**

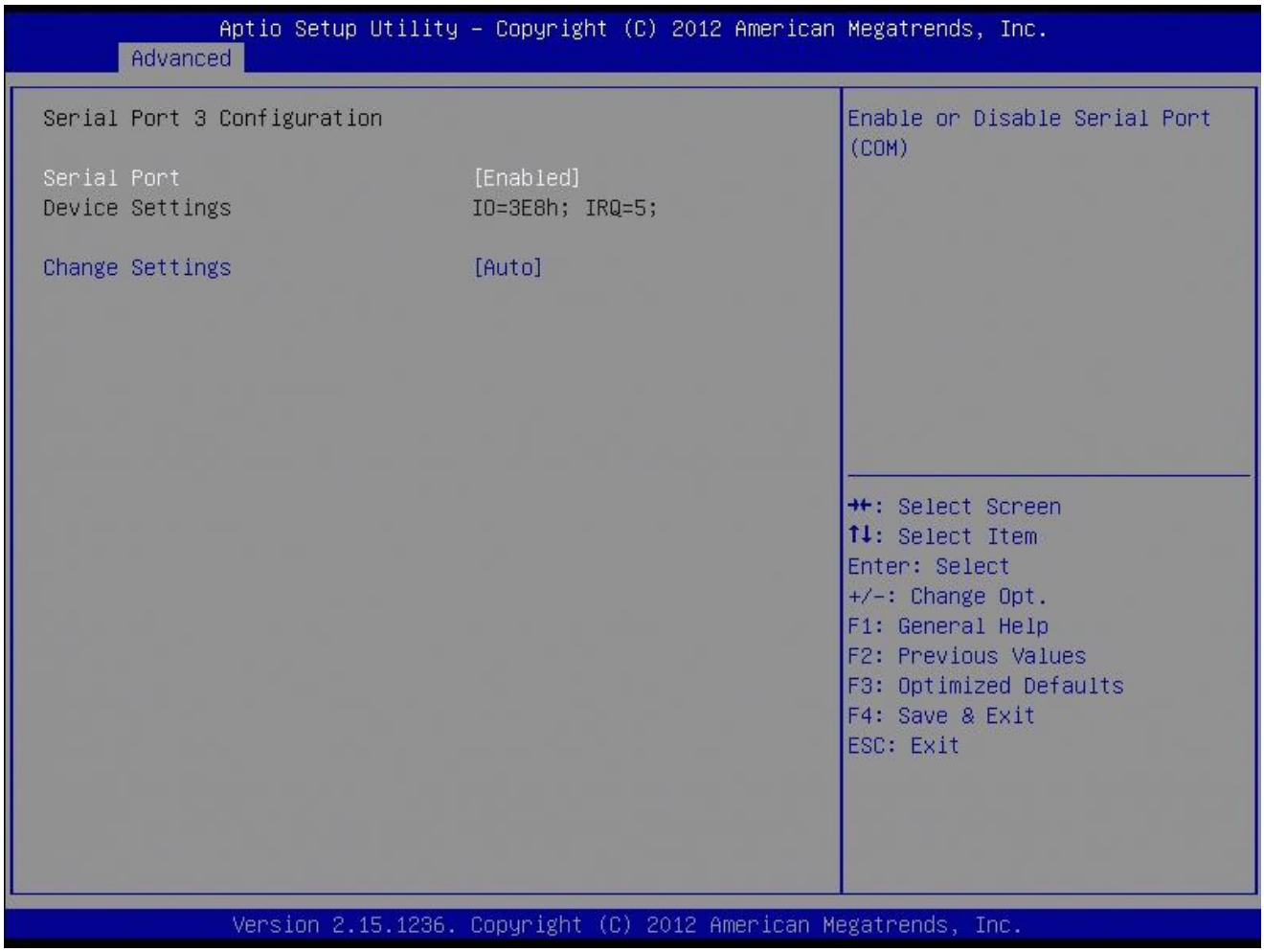
- **Change Setting[Auto]**

Select an optimal setting for Super IO device.

Configuration options: [Auto] [IO=2F8h; IRQ=3][IO=3F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12] [IO=2F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12][IO=3E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12] [IO=2E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12]

3.4.2.8.3 Serial Port 3 configuration

Set Parameters of Serial Port 3



Serial Port 3 Configuration

- **Serial Port [Enabled]**

Enable or Disable Serial Port.

Configuration options: [Disabled] [Enabled]

- **Device Setting [IO=3E8h; IRQ=5]**

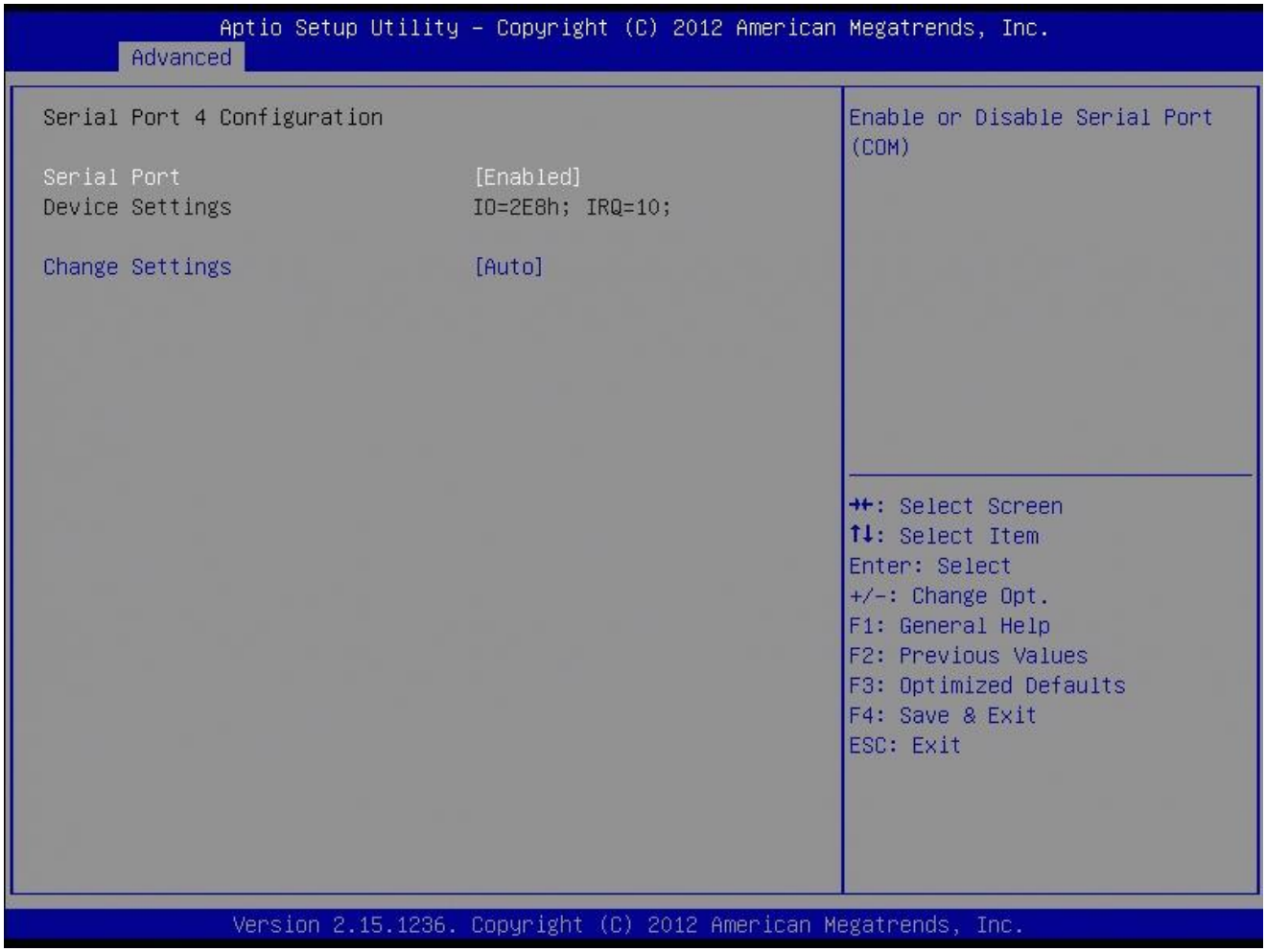
- **Change Setting[Auto]**

Select an optimal setting for Super IO device.

Configuration options: [Auto][IO=3E8h; IRQ=5][IO=3E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12] [IO=2E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12][IO=2E0h; IRQ=3, 4, 5, 6, 7, 10, 11, 12] [IO=2F0h; IRQ=3, 4, 5, 6, 7, 10, 11, 12]

3.4.2.8.4 Serial Port 4 configuration

Set Parameters of Serial Port 4



Serial Port 4 Configuration

- **Serial Port [Enabled]**

Enable or Disable Serial Port.

Configuration options: [Disabled] [Enabled]

- **Device Setting [IO=2E8h; IRQ=10]**

- **Change Setting[Auto]**

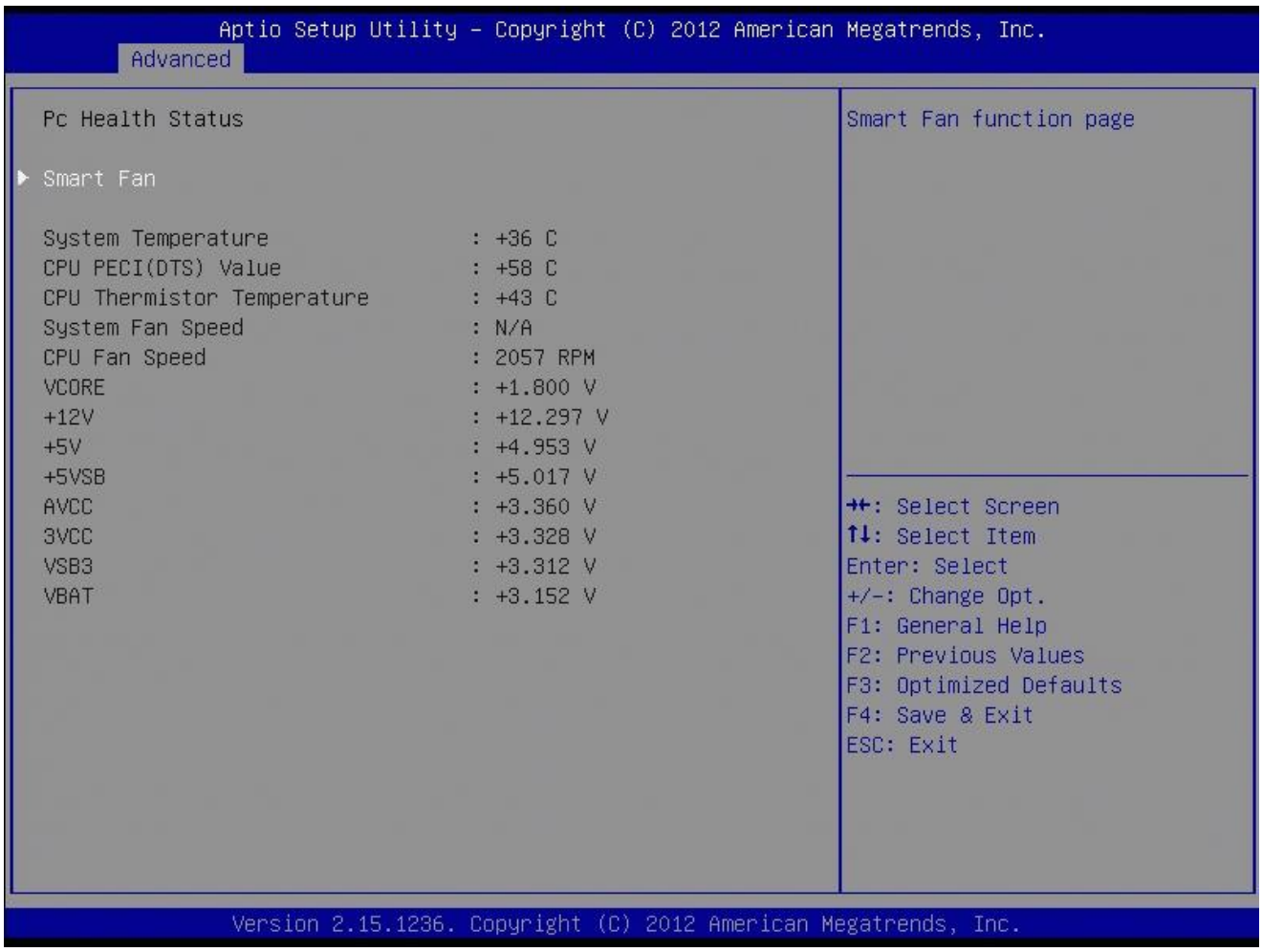
Select an optimal setting for Super IO device.

Configuration options: [Auto][IO=2E8h; IRQ=10][IO=3E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12] [IO=2E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12][IO=2E0h; IRQ=3, 4, 5, 6, 7, 10, 11, 12] [IO=2F0h; IRQ=3, 4, 5, 6, 7, 10, 11, 12]

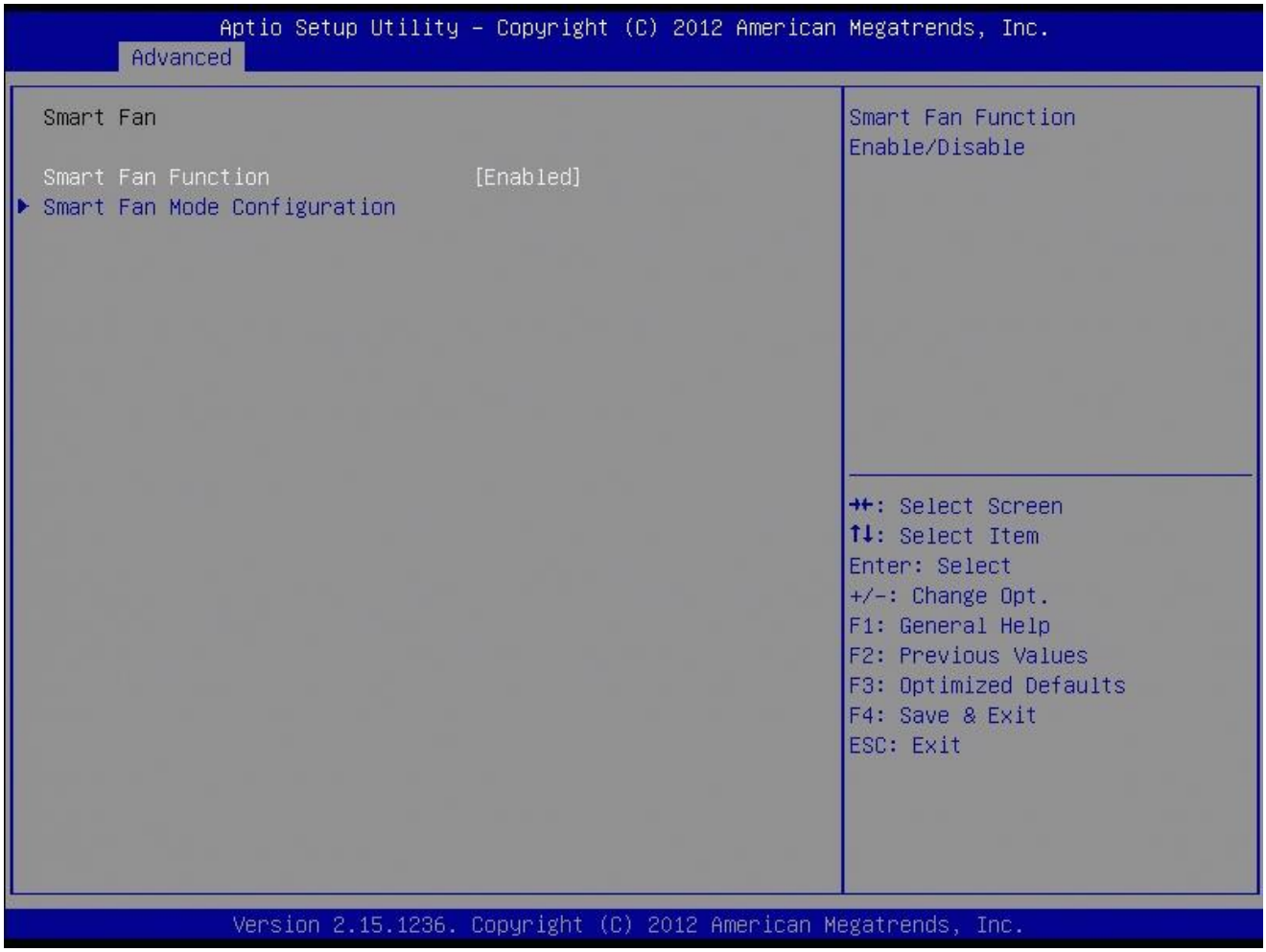
3.4.2.9 NCT6106D Hardware Monitor

- **PC Health Status**

Display system health status


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Advanced
Pc Health Status
Smart Fan
System Temperature : +36 C
CPU PECI(DTS) Value : +58 C
CPU Thermistor Temperature : +43 C
System Fan Speed : N/A
CPU Fan Speed : 2057 RPM
VCORE : +1.800 V
+12V : +12.297 V
+5V : +4.953 V
+5VSB : +5.017 V
AVCC : +3.360 V
3VCC : +3.328 V
VSB3 : +3.312 V
VBAT : +3.152 V
Smart Fan function page
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

3.4.2.9.1 Smart Fan

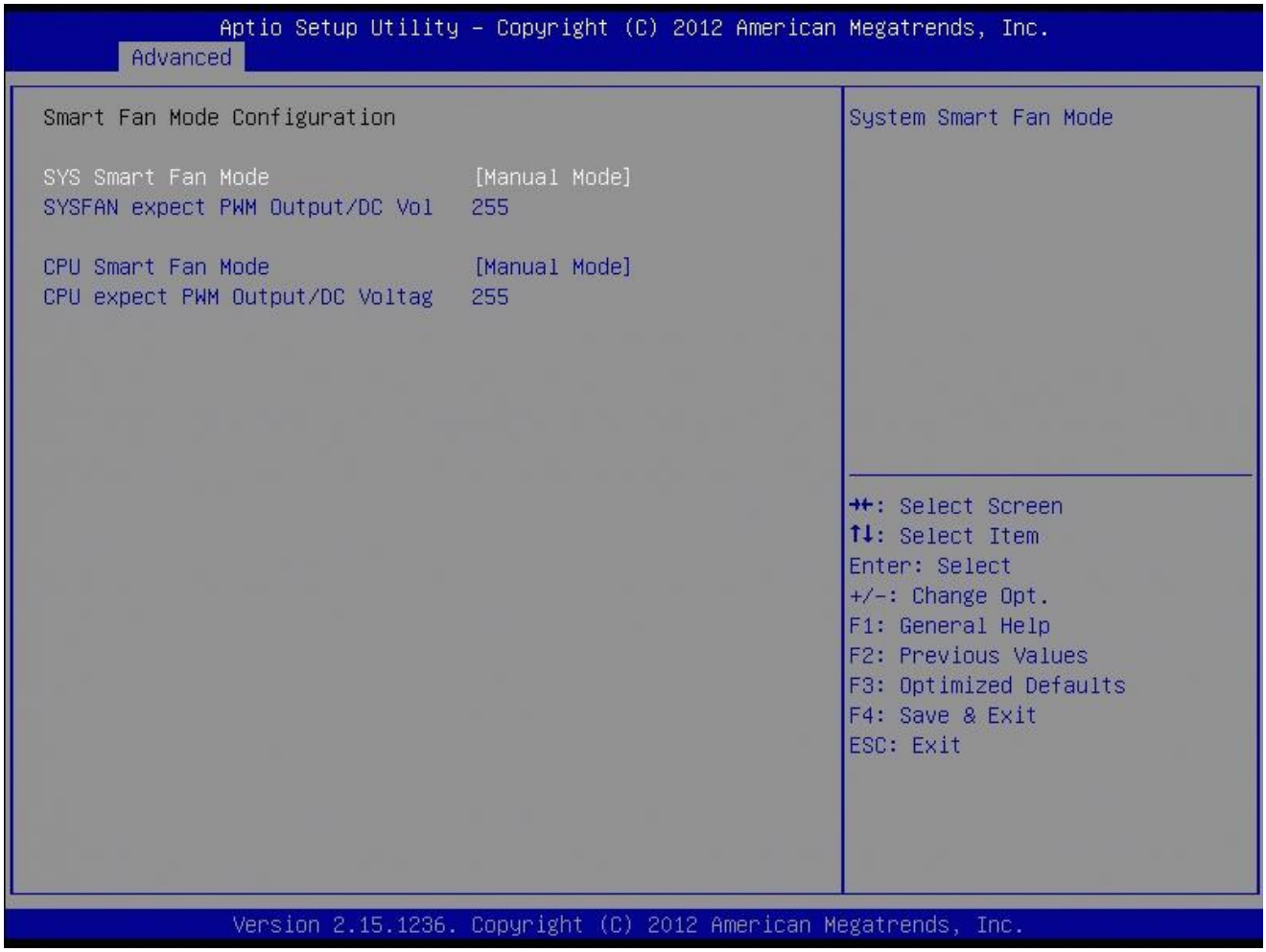


- **Smart Fan Function [Enabled]**

Configuration options: [Disabled] [Enabled]

3.4.2.9.2 Smart Fan Mode Configruation

Smart Fan Mode configuration


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Advanced
Smart Fan Mode Configuration
SYS Smart Fan Mode [Manual Mode]
SYSFAN expect PWM Output/DC Vol 255
CPU Smart Fan Mode [Manual Mode]
CPU expect PWM Output/DC Voltag 255
System Smart Fan Mode
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

- **System Fan Mode [Manual Mode]**

Select system Fan mode

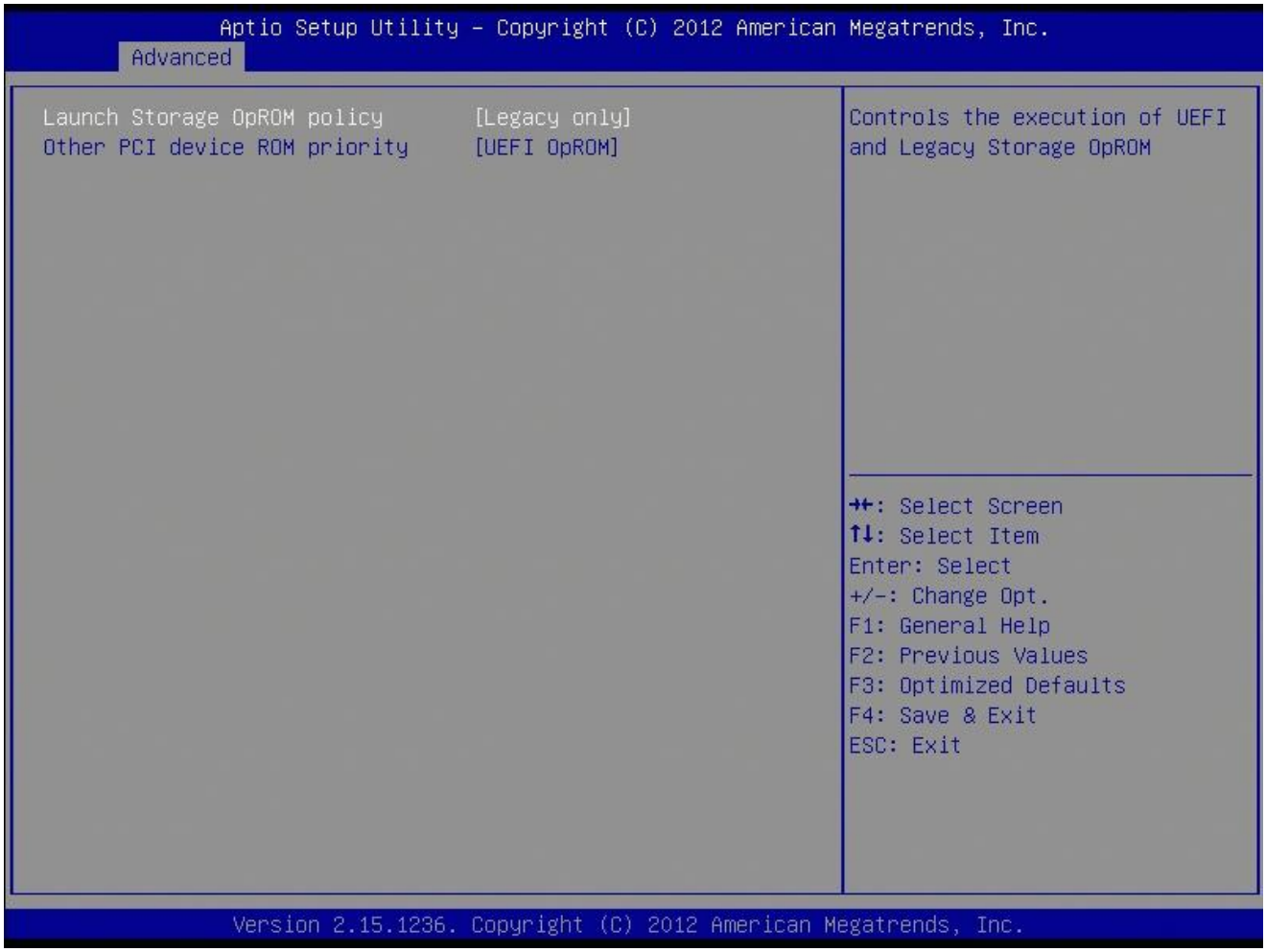
Configuration options: [Manual Mode][Thermal Cruise Mode]

- **CPU Fan Mode [Manual Mode]**

Select CPU Fan mode

Configuration options: [Manual Mode][Thermal Cruise Mode]

3.4.2.10 Option ROM Policy


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Advanced
Launch Storage OpROM policy [Legacy only]
Other PCI device ROM priority [UEFI OpROM]
Controls the execution of UEFI and Legacy Storage OpROM
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

- **Launch Storage OpROM policy [Legacy only]**

Enable or Disable Boot Option For Legacy Mass Storage Devices with Option ROM
Configuration options: [Do not launch] [UEFI only] [Legacy only]

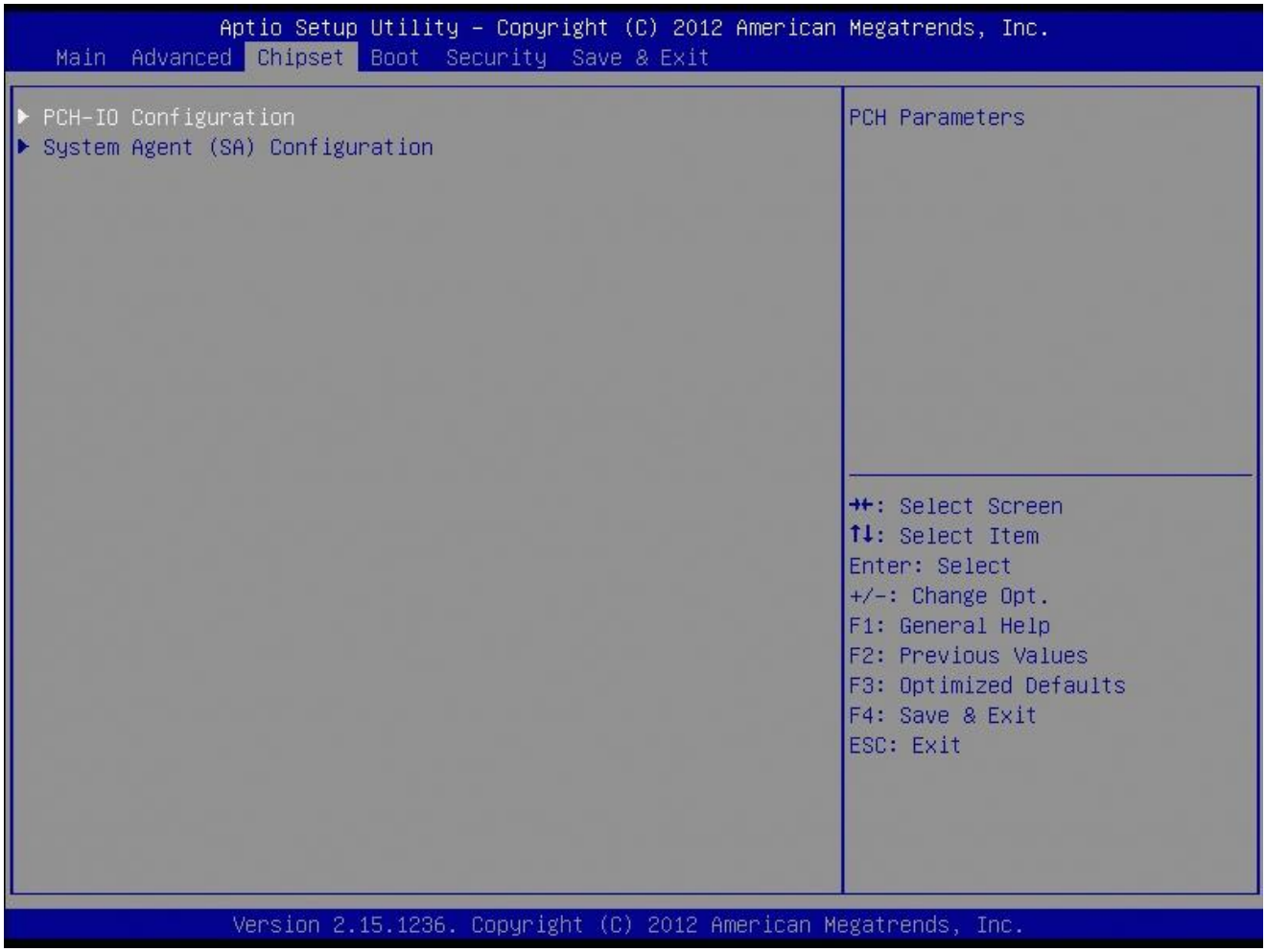
- **Other PCI Device ROM priority priority [UEFI OpROM]**

Configuration options: [UEFI OpROM] [Legacy OpROM]

3.4.2.11 Intel RC Driver Version Detail

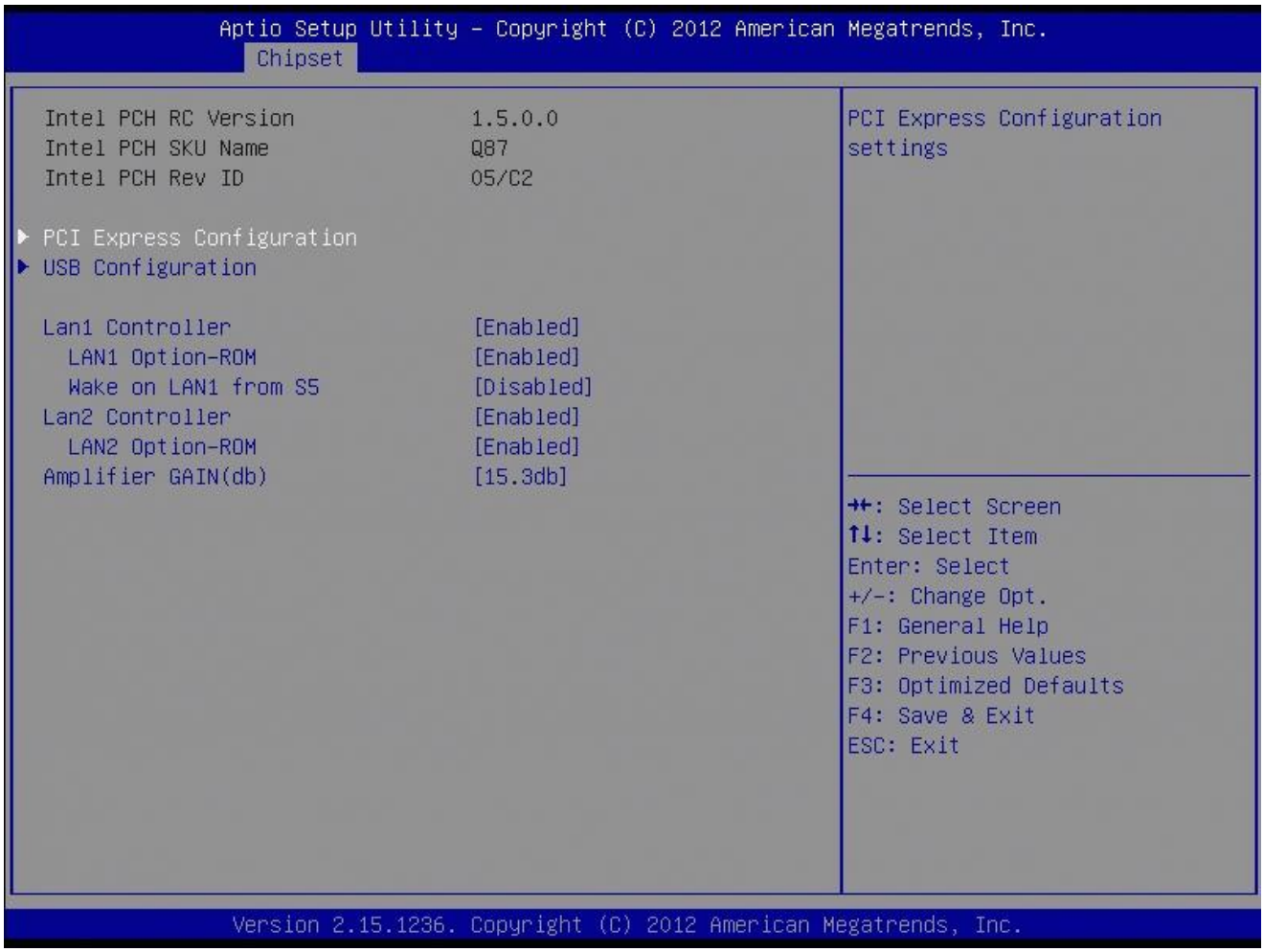
Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Advanced
Intel CPU RC Version 1.5.0.0
Intel SA RC Version 1.5.0.0
Intel PCH RC Version 1.5.0.0
Intel ACPI RC Version 1.5.0.0
Intel ME RC Version 1.5.0.0
Intel RST RC Version 1.5.0.0
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

3.4.3 Chipset


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
PCH-IO Configuration
System Agent (SA) Configuration
PCH Parameters
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

3.4.3.1 PCH-IO Configuration

PCH-IO Configuration



- **LAN1 Controller [Enabled]**

Enable/Disable LAN1 Controller

Configuration options: [Disabled] [Enabled]

- **LAN1 Option-ROM [Disabled]**

Enable/Disable LAN1 boot option for legacy network devices.

Configuration options: [Disabled] [Enabled]

- **Wake on LAN1 from S5 [Disabled]**

Configuration options: [Disabled] [Enabled]

- **LAN2 Controller [Enabled]**

Enable/Disable LAN1 Controller

Configuration options: [Disabled] [Enabled]

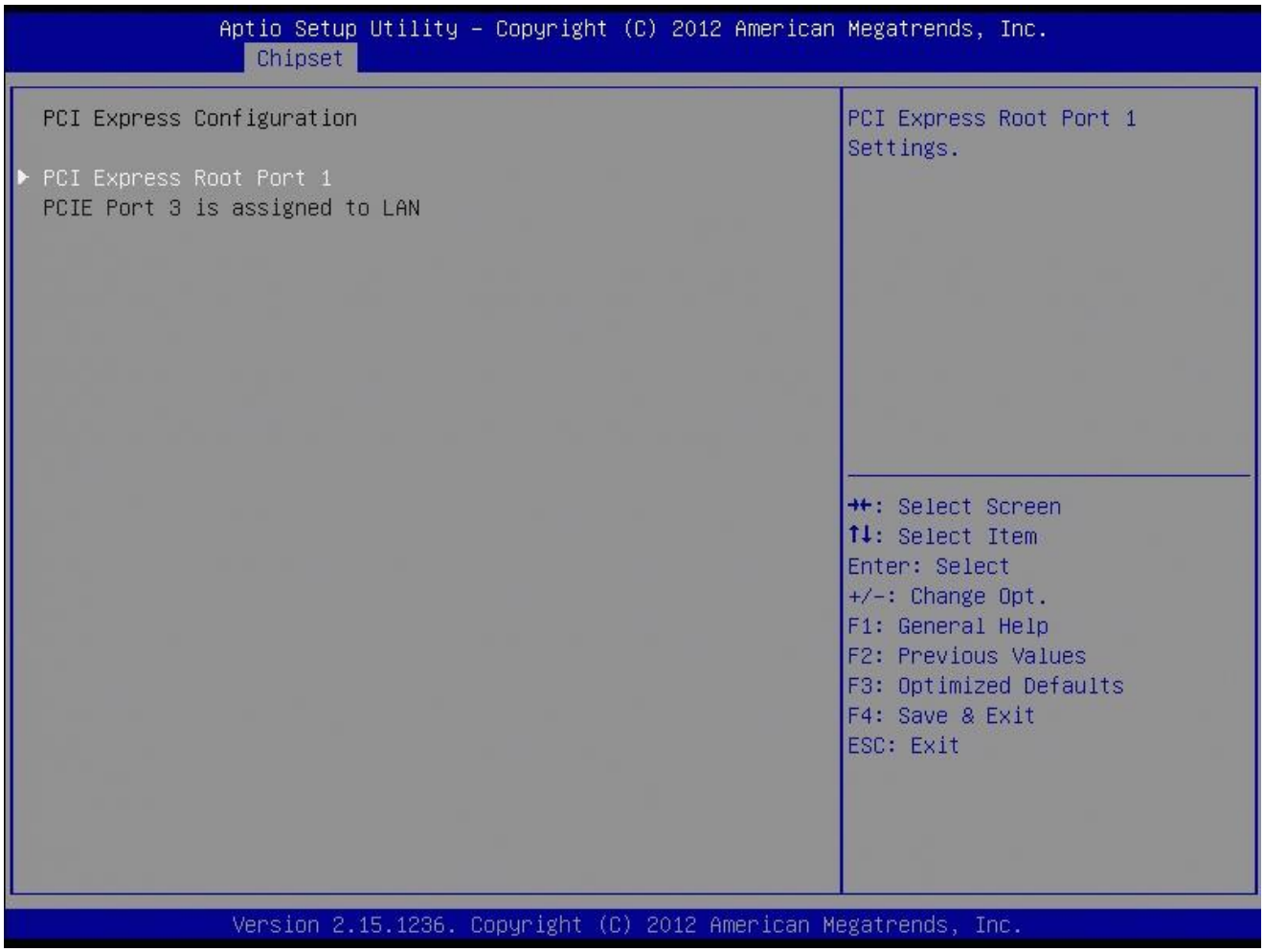
- **LAN2 Option-ROM [Disabled]**

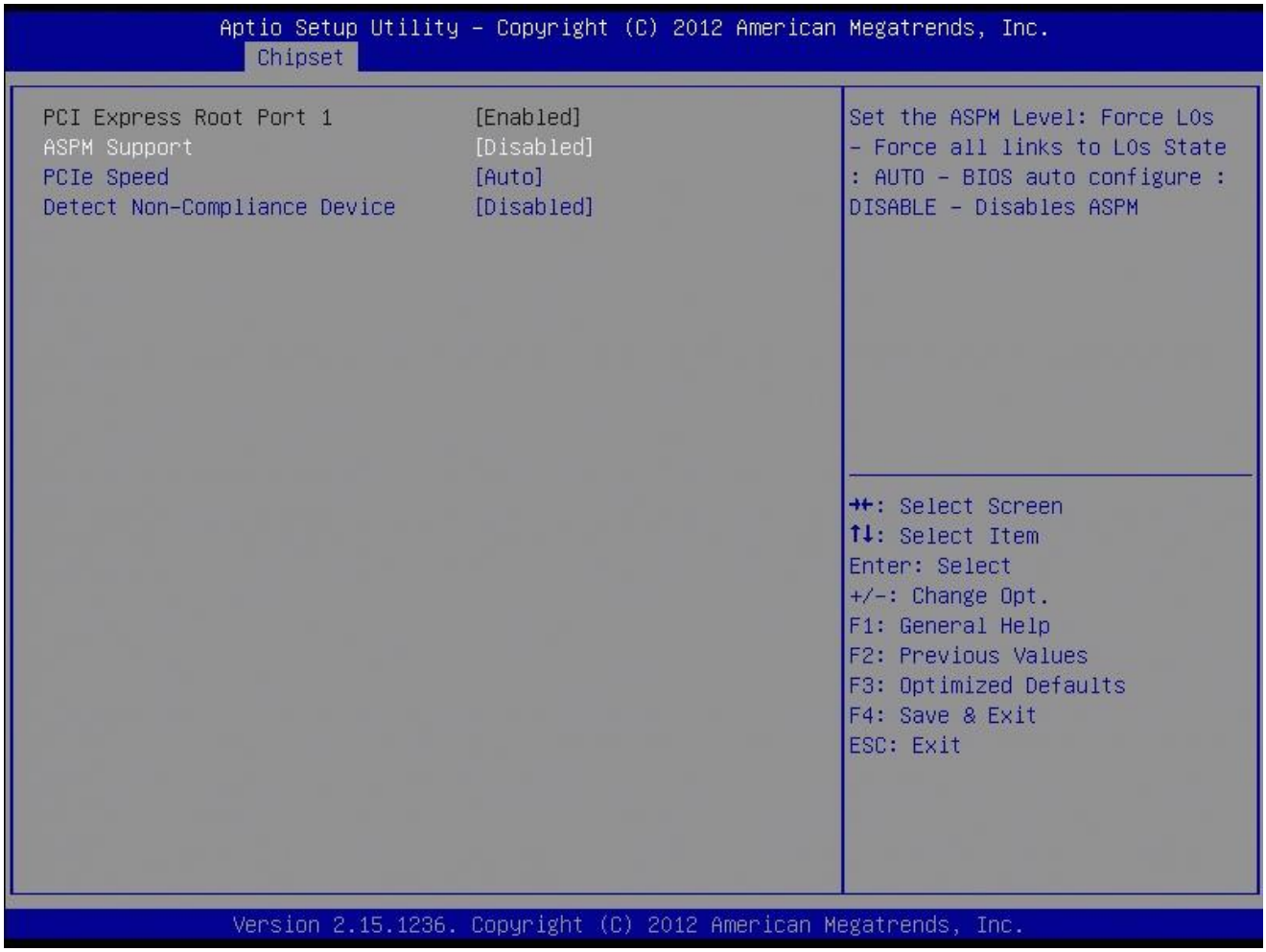
Enable/Disable LAN2 boot option for legacy network devices.
Configuration options: [Disabled] [Enabled]

- **Amplifier GAIN(db) [15.3db]**

Setting Amplifier GAIN
Configuration options:[15.3db][21.2db][27.2db][31.8db]

3.4.3.1.1 PCI Express Configuration


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Chipset
PCI Express Configuration
PCI Express Root Port 1
PCIE Port 3 is assigned to LAN
PCI Express Root Port 1 Settings.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Chipset
PCI Express Root Port 1 [Enabled]
ASPM Support [Disabled]
PCIe Speed [Auto]
Detect Non-Compliance Device [Disabled]
Set the ASPM Level: Force L0s – Force all links to L0s State : AUTO – BIOS auto configure : DISABLE – Disables ASPM
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

- **PCI Express Root Port 1 [Enabled]**

Configuration options: [Disabled] [Enabled]

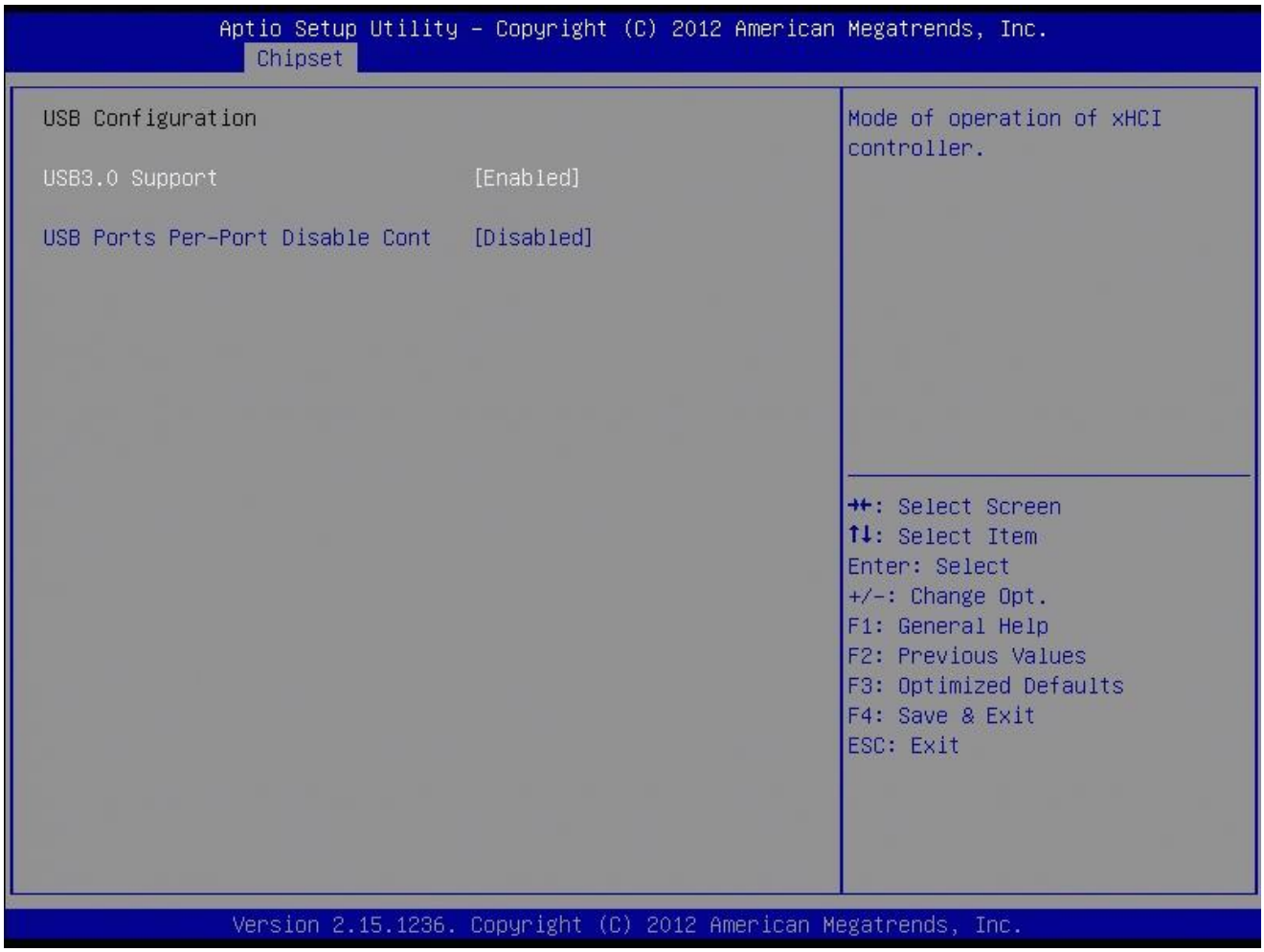
- **ASPM Support [Disabled]**

- **PCIe Speed [Auto]**

- **Detect Non-Compliance Device [Disabled]**

Configuration options: [Disabled] [Enabled]

3.4.3.1.2 USB Configuration



- **USB3.0 Support [Enabled]**

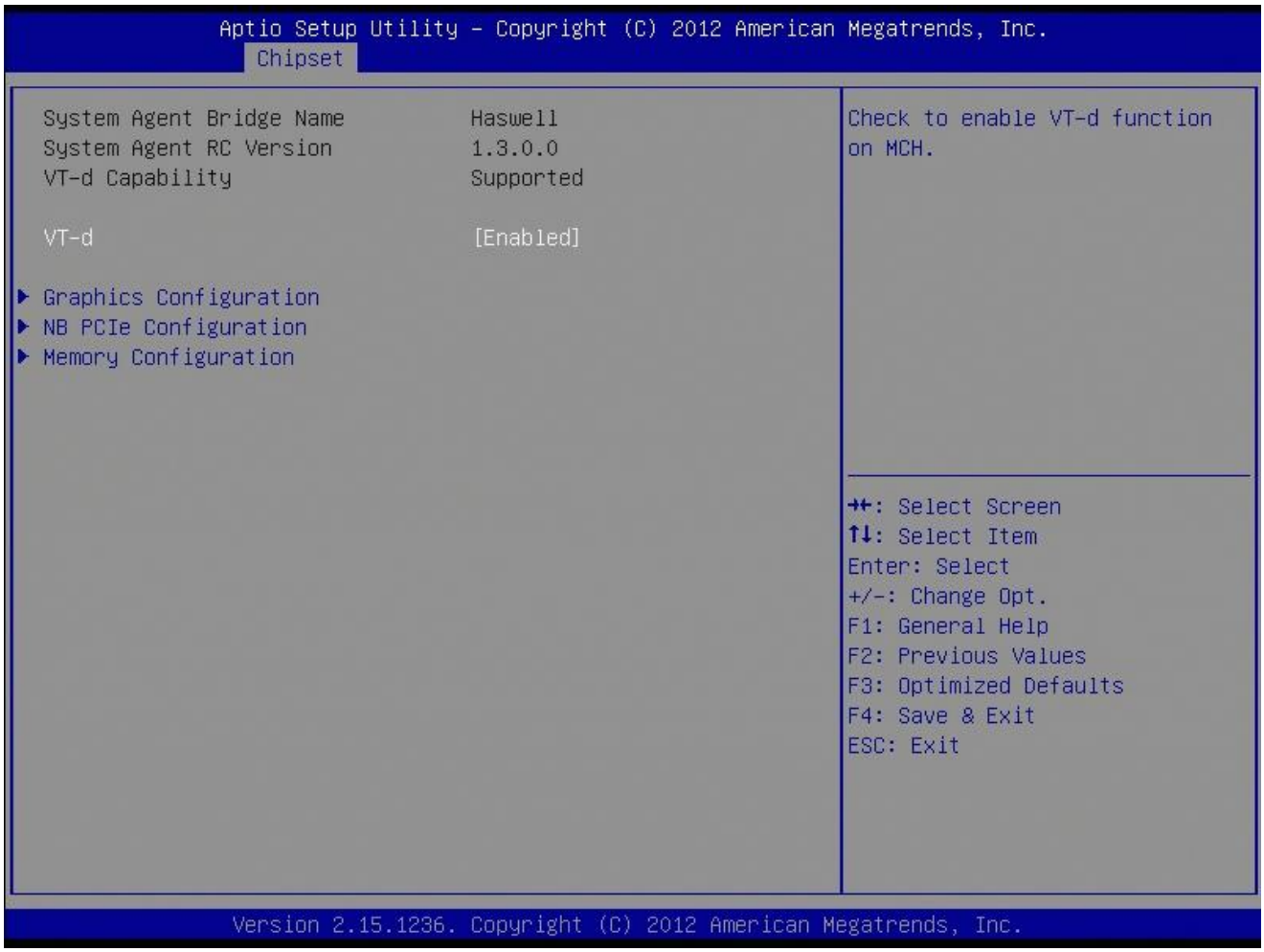
Enable/Disable USB 3.0 support

Configuration options: [Disabled] [Enabled]

- **USB ports per-port disable cont [Disabled]**

Configuration options: [Disabled] [Enabled]

3.4.3.2 System Agent (SA) Configuration

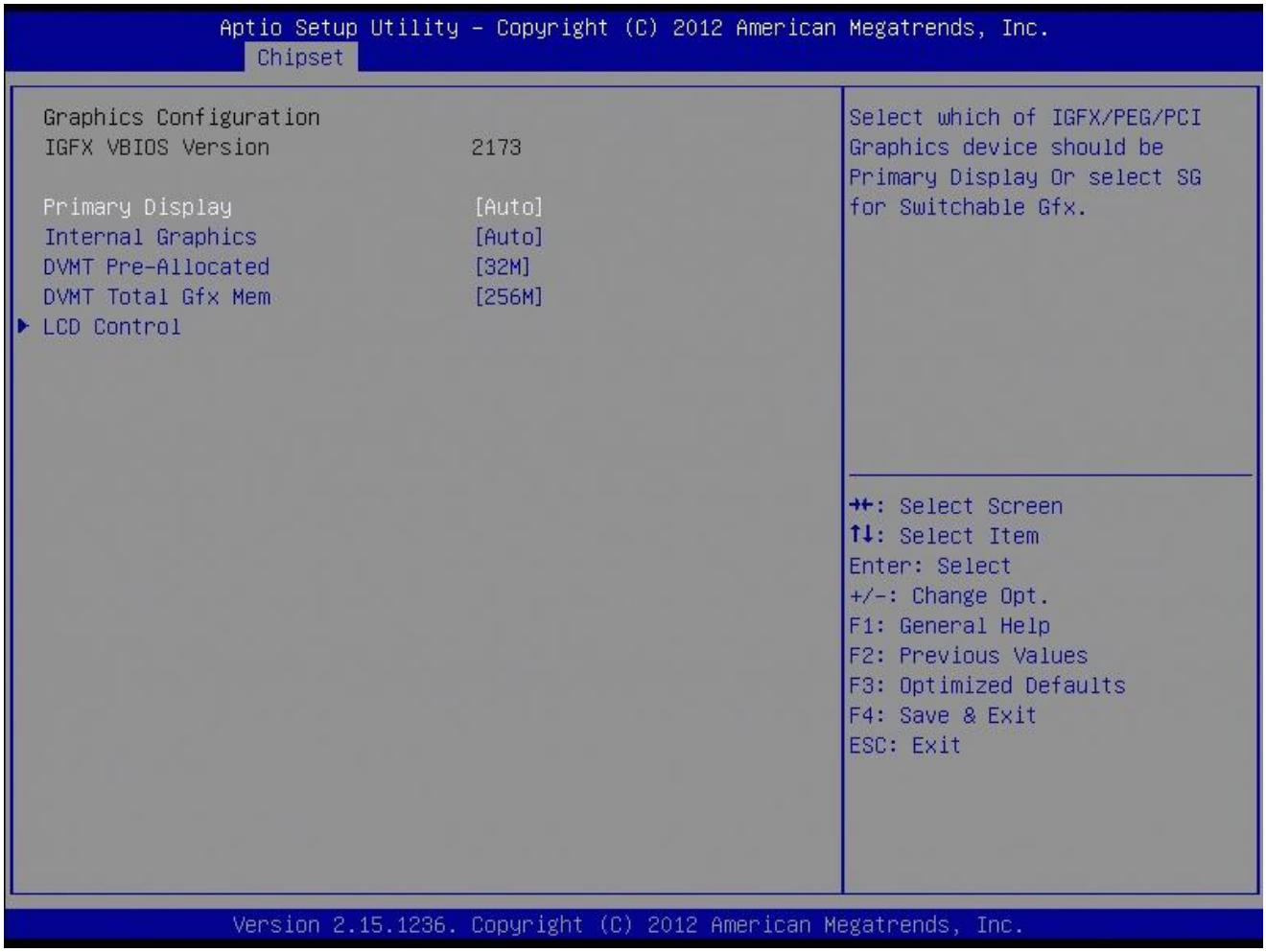


- **VT-d [Disabled]**

Set VT-d Enable or Disable

Configuration options: [Disabled] [Enabled]

3.4.3.2.1 Graphics Configuration


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Chipset
Graphics Configuration
IGFX VBIOS Version 2173
Primary Display [Auto]
Internal Graphics [Auto]
DVMT Pre-Allocated [32M]
DVMT Total Gfx Mem [256M]
LCD Control
Select which of IGFX/PEG/PCI Graphics device should be Primary Display Or select SG for Switchable Gfx.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

- **Primary Display [AUTO]**

Select which of IGFX/PEG Graphics device should be Primary Display or select SG for Switchable Gfx.
Configuration options: [AUTO][IGFX][PEG]

- **Internal Graphics [Auto]**

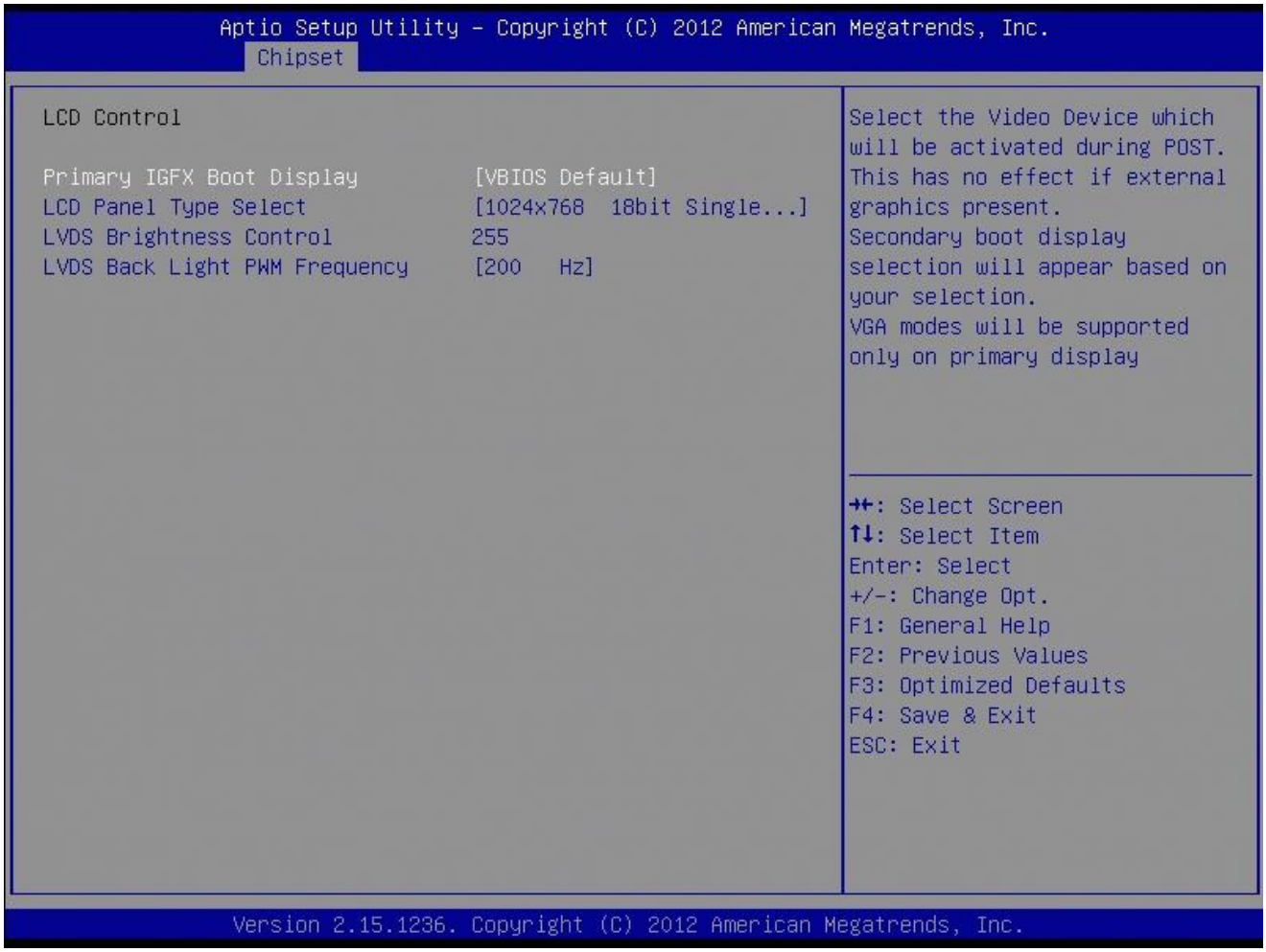
- **DVMT Pre-Allocated [32M]**

Select DVMT 5.0 Pre-Allocated (Fixed) graphics memory size used by the internal graphics device. Configuration options: [32M]~[512M]

- **DVMT Total Gfx Mem [256M]**

Select DVMT 5.0 total graphics memory size used by the internal graphics device.
Configuration options: [128M][256M][MAX]

3.4.3.2.1.1 LCD Control


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Chipset
LCD Control
Primary IGFX Boot Display [VBIOS Default]
LCD Panel Type Select [1024x768 18bit Single...]
LVDS Brightness Control 255
LVDS Back Light PWM Frequency [200 Hz]
Select the Video Device which will be activated during POST. This has no effect if external graphics present. Secondary boot display selection will appear based on your selection. VGA modes will be supported only on primary display
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

- **Primary IGFX Boot Display [VBIOS Default]**

Select the Video Device that will be activated during POST. This has no effect if external graphics present. Secondary booty display selection will appear based on your selection. VGA modes will be supported only on primary display.
Configuration options: [VBIOS Default][CRT][DisplayPort][HDMI][LVDS]

- **LCD Panel Type Select**

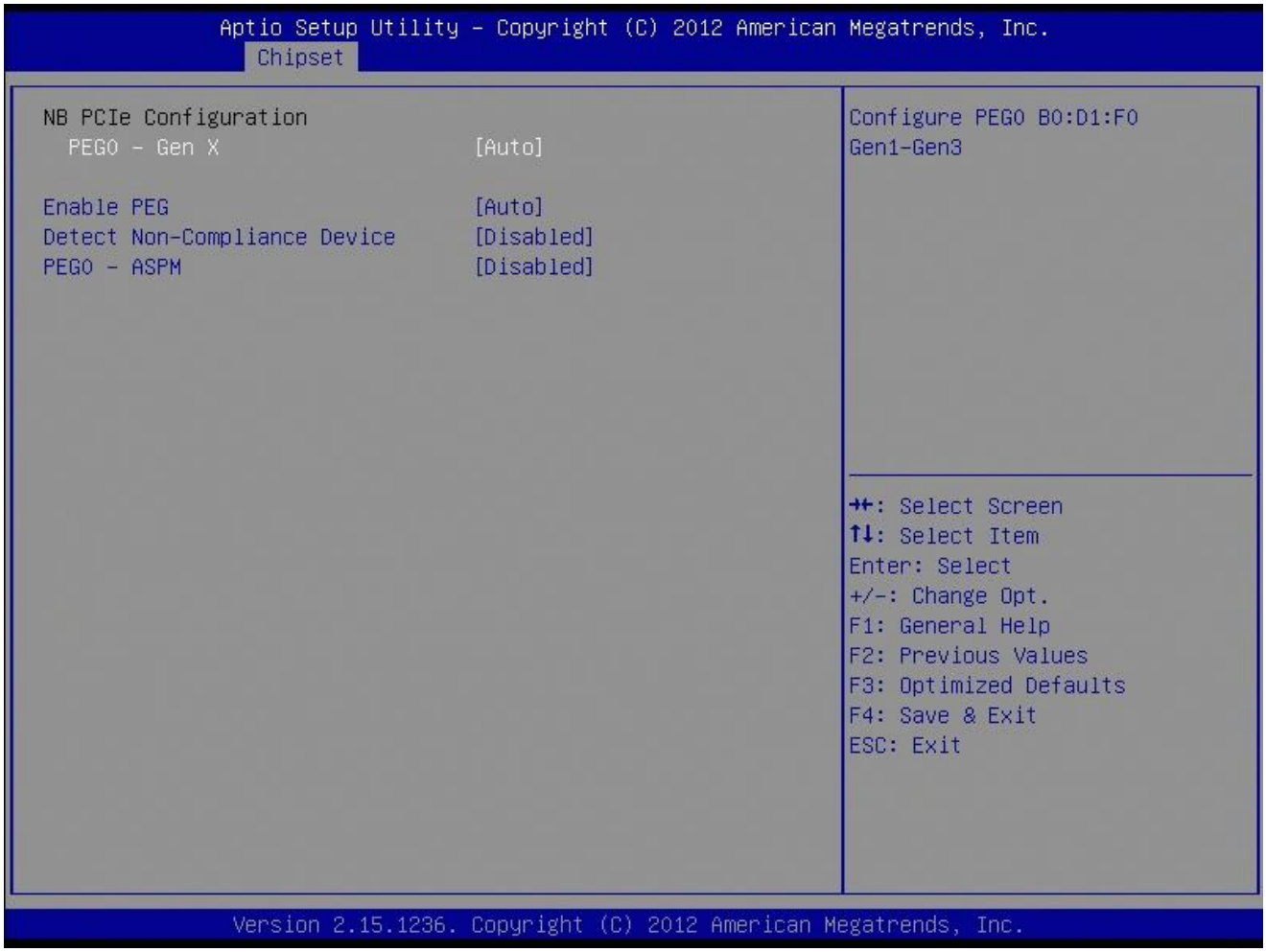
Select LCD Panel resolution

- **LVDS Brightness Control [30]**

Configuration options:[1]~[255]

- **LVDS Back Light PWM Frequency [200 Hz]**

3.4.3.2.2 PCIe Configuration



- **PEG0 – Gen X [Auto]**

Configure PEG0 Gen1~Gen3

Configuration options: [Auto][Gen1][Gen2][Gen3]

- **Enable PEG [Auto]**

To enable/Disable the PEG slot.

Configuration options:[Auto][Enable][Disable]

- **Detect Non-Compliance Device [Disabled]**

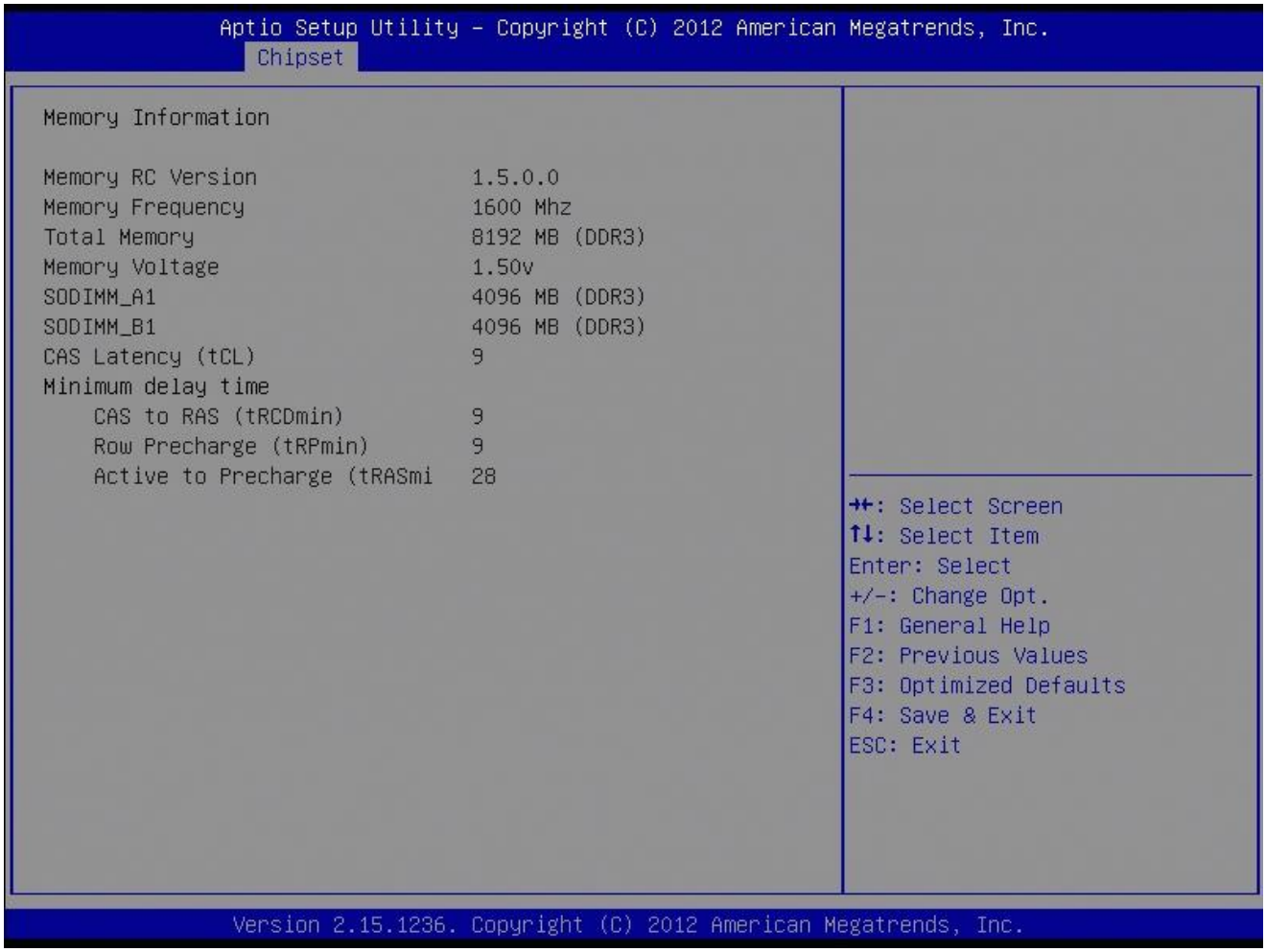
Configuration options:[Auto][Enable][Disable]

- **PEG ASPM [Disabled]**

Control ASPM support for the PEG Device. This has no effect if PEG is not the currently active device.

Configuration options: [Disabled] [Auto] [ASPM L0s] [ASPM L1] [ASPM L0sL1]

3.4.3.2.3 Memory Information

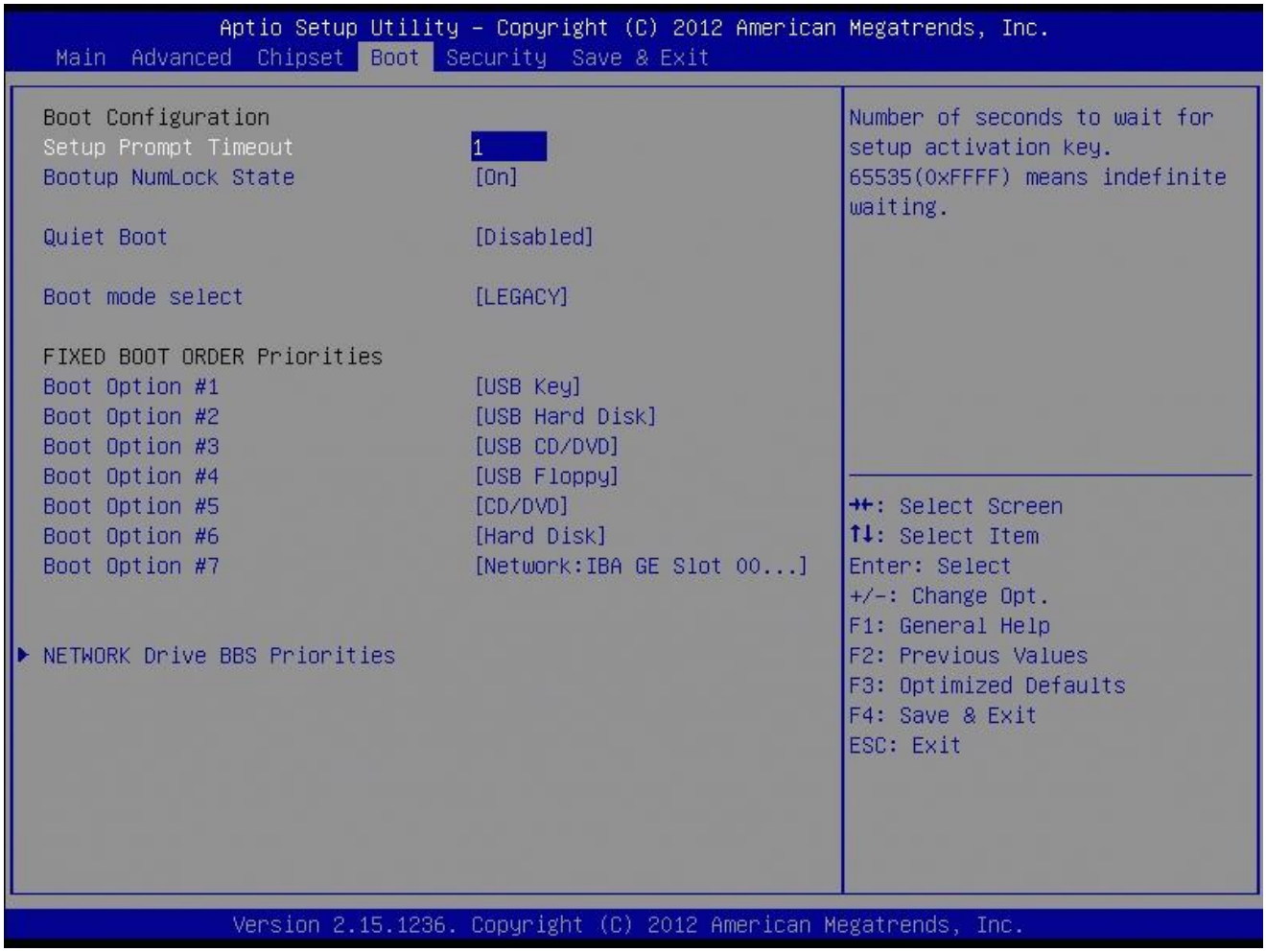


- **Memory Information**

Display Memory Information

3.4.4 Boot

Boot Configuration


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
Boot Configuration
Setup Prompt Timeout 1
Bootup NumLock State [On]
Quiet Boot [Disabled]
Boot mode select [LEGACY]
FIXED BOOT ORDER Priorities
Boot Option #1 [USB Key]
Boot Option #2 [USB Hard Disk]
Boot Option #3 [USB CD/DVD]
Boot Option #4 [USB Floppy]
Boot Option #5 [CD/DVD]
Boot Option #6 [Hard Disk]
Boot Option #7 [Network:IBA GE Slot 00...]
NETWORK Drive BBS Priorities
Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

- **Setup Prompt Timeout [1]**

Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.

- **Bootup NumLock State [On]**

Select the keyboard NumLock state

Configuration options: [On] [Off]

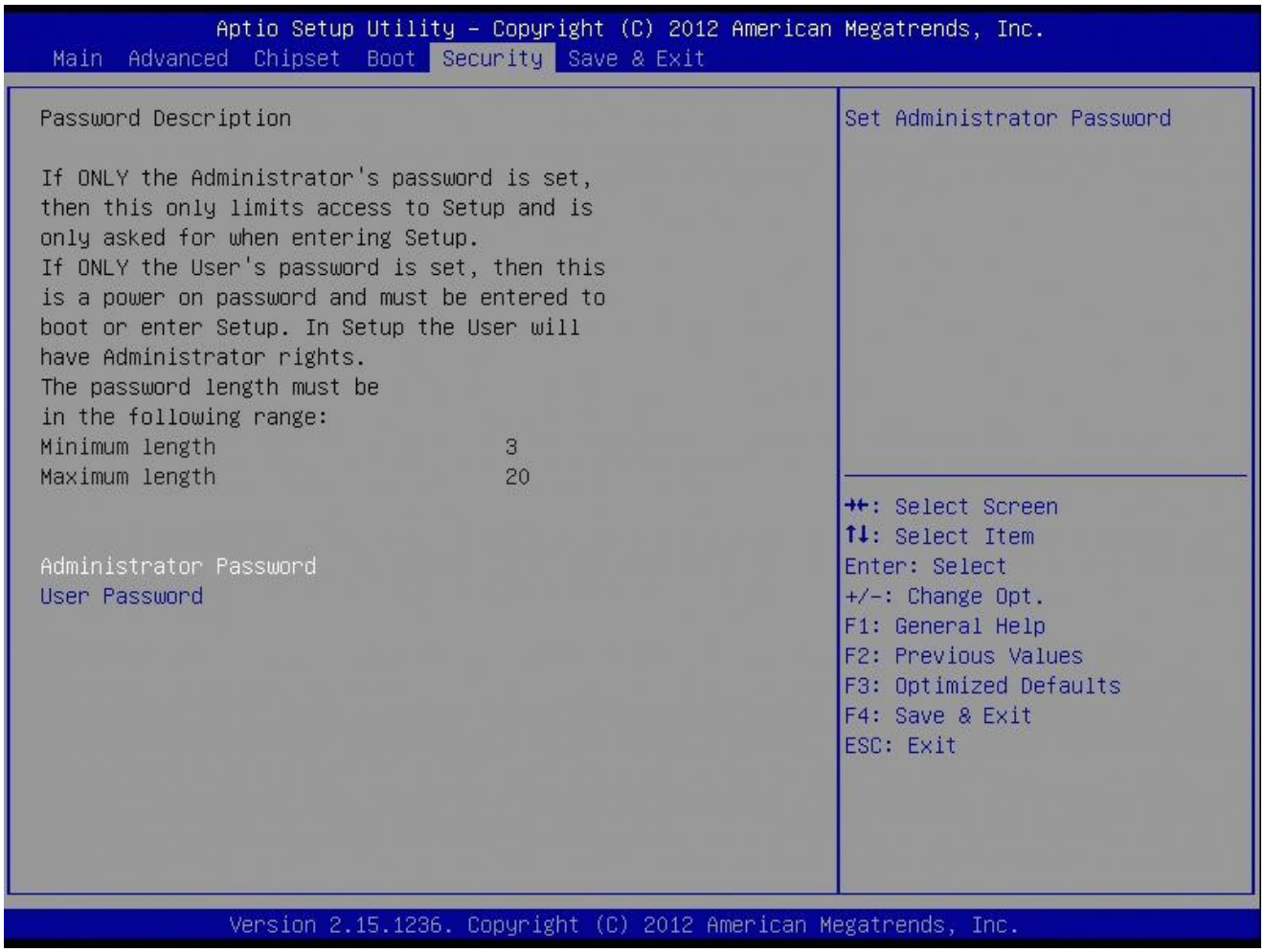
- **Quiet Boot [Disabled]**

Configuration options:[Enable][Disable]

- **Boot mode select [LEGACY]**

Configuration options:[UEFI][LEGACY]

3.4.5 Security


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
Password Description
If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup.
If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights.
The password length must be in the following range:
Minimum length 3
Maximum length 20
Administrator Password
User Password
Set Administrator Password
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

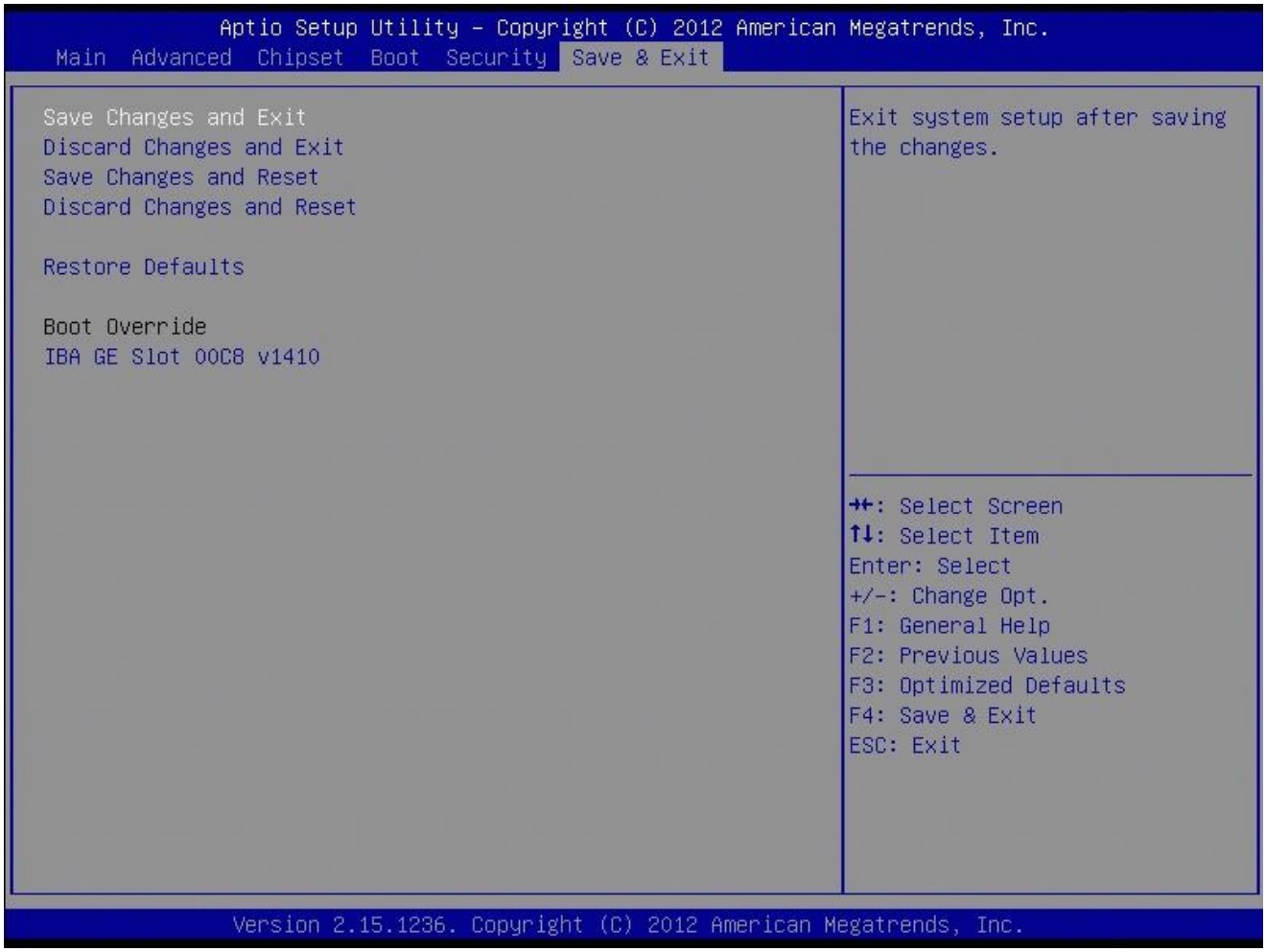
- **Administrator Password**

Set setup Administrator Password

- **User Password**

Set User Password

3.4.6 Save & Exit


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
Save Changes and Exit
Discard Changes and Exit
Save Changes and Reset
Discard Changes and Reset
Restore Defaults
Boot Override
IBA GE Slot 00C8 v1410
Exit system setup after saving the changes.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

- **Save changes and Exit**

Exit system setup after saving the changes.

- **Discard changes and Exit**

Exit system setup without saving the changes.

- **Save changes and Reset**

Reset system after saving the changes.

- **Discard changes and Reset**

Reset system without saving the changes.

- **Restore Defaults**

Restore/Load default values for all the setup option.